

The University of Chicago

TRENDS IN STATE RESOURCES PLANNING

A DISSERTATION SUBMITTED TO THE FACULTY
OF THE DIVISION OF THE SOCIAL SCIENCES
IN CANDIDACY FOR THE DEGREE OF DOCTOR
OF PHILOSOPHY

DEPARTMENT OF POLITICAL SCIENCE

1938

By

CLIFFORD J. HYNNING

Private Edition, Distributed by
THE UNIVERSITY OF CHICAGO LIBRARIES
CHICAGO, ILLINOIS

Reprint of
STATE CONSERVATION OF RESOURCES
National Resources Committee
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PREFACE

It is not possible to appraise the significance of our present State planning boards without an understanding of their origins and the several steps in their later development. The following historical sketch of State activities is of very great value in examining the trends of the American commonwealth, and in looking forward to the future management of State resources. By looking back over the long road from early indifference to scattered forms of protection of resources, on to a period of systematic conservation, first of natural and then of human resources, we may see the basis for the beginning of orderly State planning as it now begins to develop. It is not by accident or as a result of some sudden impulse that our American States recently began systematically to organize agencies and set up programs to bring about the highest and best use of our vast State and national domain. This movement was the outgrowth of a long series of experiments of the trial and error type through which the American States came to realize the importance of orderly development of the fullest possibilities of their assets.

To those who point out that the State planning boards have thus far engaged in a variety of activities without very clear definition of their central objective, this historical review will show how the whole program of the States from the beginning of our history has been of this experimental kind; and indeed this might be said of the development of American national policy as a whole.

The conservation movement was the beginning of a notable change both in the policy of the States and of the Nation as well. It is interesting and important to note that city planning began at about the same time as the conservation movement. It was not a mere coincidence that shortly after the turn of the twentieth century there appeared (1) the national conservation movement, (2) the State conservation movement, and (3) the city planning movement. Supplementing this development, there have appeared in recent years the county planning movement, the State planning movement, the regional planning movement, and the national planning movement. The earlier conservation development referred, indeed, in words to the conservation of human resources, but in practice only natural resources were dealt with. Human resources were the focus of attention only in the more recent period of growth.

The importance of the whole State conservation and planning trend can not lightly be dismissed. As the recent committee on the appraisal of State planning boards* said: "If planning can bring about a more economical utilization and conservation of our resources, it will contribute much toward maintaining the foundations of representative government. * * * Representative government rests upon a faith in gradualism, a general acceptance of the proposition that through governmental action a slow but certain adjustment of injustices will occur."

Nowhere is this gradual adjustment of "injustices" more clearly seen than in Dr. Hynning's careful description of the step by step advance of the American States toward the solution of the problem of most effectively utilizing our rich resources in practical and effective manner. Those who are impatient with everything except impetuosity find little of value in the gradual growth of

*Report on the *Future of State Planning* issued by the National Resources Committee, March 1938. (Superintendent of Documents, Washington, D. C.)

State conservation and planning, in the trial and error method of our many commonwealths, with widely different problems, struggling toward ideals of prosperity and liberty in a framework of free society. But to those of us who have watched the trends of American institutions, these stages of development are of the very greatest importance in the national evolution. They mark the beginnings of a form of planning which is at once democratic and decentralized, although united with a national program of national American action. They mark the beginning of a movement which will bring about the utilization in Nation and State of the fullest possibilities of our national productive assets and talents. From this will emerge far higher standards of American living, material and human, in a new era where the promise of American democracy is at last fully realized.

CHARLES E. MERRIAM.

December 1938.

TABLE OF CONTENTS

	Page vii
INTRODUCTION.	
PART I. GENERAL TRENDS.	
CHAPTER 1. The State Management of Resources.	1
The Democratic Setting.	2
The General Pattern of Chronology.	3
The Strategy of Resources Planning and Its Legal Basis.	4
Planning Trends in New York.	10
PART II. SPECIAL TRENDS.	
CHAPTER 2. Land.	17
Public Land Techniques and Policies.	18
Land Classification and Withdrawal.	20
Land Surveys.	22
Wildlife.	22
Forestry.	26
Parks.	31
CHAPTER 3. Minerals.	35
Mineral Policies on the Public Lands.	36
The Surveys, Primarily Geological.	39
Conservation of Mineral Fuels.	41
CHAPTER 4. Water.	46
The Canal Era: "Planned Systems" of Internal Improvements.	47
Fish and Water Pollution—Interstate Origins.	52
Flood, Drainage, and Irrigation.	56
Comprehensive Water Planning.	61
CHAPTER 5. Human Resources.	64
Education.	66
Health.	71
Labor.	75
Welfare.	79
PART III. TRENDS IN COMPREHENSIVE PLANNING.	
CHAPTER 6. The Emergence of the Technique of Comprehensive Planning of Resources.	84
Origin of the Technique of Multiple-Use and Comprehensive Planning of Resources.	86
State Conservation Agencies.	90
Origin and Growth of Agencies Organized for the Primary Purpose of Comprehensive Planning.	103
APPENDIX.	
A. Establishment of State Agencies Concerned With Natural Resources.	105
B. Establishment of State Agencies Concerned With Human Resources.	106
C. Schedule Sent to State Planning Boards.	107
D. List of State Agencies Engaged in the Management of Natural Resources.	108
INDEX.	111

LIST OF FIGURES

	Page
1. Growth of State Agencies for Game Conservation	25
2. Growth of State Agencies for Forest Conservation	30
3. Growth of State Park Agencies	33
4. Development of the State Geological Surveys	40
5. Growth of State Agencies for Fish Conservation	55
6. Growth of State Education Agencies	70
7. Growth of State Health Agencies	73
8. Growth of State Bureaus of Labor Statistics	77
9. Growth of State Welfare Agencies	80
10. State Conservation Agencies, 1908-11	96

TABLES

1. State Conservation Commission Legislation, 1908-13	93
2. Scope of Activities of the Roosevelt State Conservation Commission as Indicated by Reports	95
3. Integration of the State Management of Natural Resources—Agencies Absorbed or Superseded	99
4. The State Management of Natural Resources—Agencies and Functions	101-102

CHRONOLOGICAL CHARTS

Main Events in New York's Management of Resources	10-12
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INTRODUCTION

This study of trends in conservation of State resources is divided into three parts. Part I is concerned with general trends in the growth of the State management of resources in terms of the emerging governmental functions, structures, and techniques of control. Part II consists of four chapters dealing with specific topical trends, i. e., the growth of the State management of land, mineral, water, and human resources. Part III traces the emergence of a technique of comprehensive planning of resources and its institutional incorporation into the framework of State government. Both the opening and concluding parts of the study relate to the conservation of resources considered as a whole, whereas the middle part consists of a series of topical chapters dealing with specific resources. The first part treats of the comparative functions, institutional structures, and strategy of resources management, whereas the concluding part relates the origin and development of the technique of comprehensive planning in the State conservation of resources.

It is the purpose of this study to point out, in the period before 1933, some of the long streams of governmental interests and activities which, under the general term "conservation," have led to conservation and planning for resources. In their inception and early growth the antecedent ideas and practices of State conservation were naturally crude in form, limited in scope to specific resources (i. e., wildlife, forests, etc.), intermittent in duration, and largely incidental to other activities of the State government. With the general growth of State conservation activities these precedents for planning have grown stronger until State planning has officially emerged in almost all the States.

In delimiting the scope of the study, the word "resources" has been used to include the conventional classification of natural resources, such as land (which subsumes forests and wildlife), minerals, and water, and also human resources, which have been treated in somewhat less detail than the former. The study is not concerned with national planning or local community planning, although certain of these aspects of American planning history have been incidentally touched upon.

Conservation, in this study, is used in the meaning which Theodore Roosevelt gave it 30 years ago. It involves not just preservation but also wise use of resources.

Management connotes organization, direction of policy towards specific objectives, and sometimes prohibits or controls. In this sense, it is not to be confused with planning, which in this study as in all publications of State planning boards is strictly an advisory research and coordinating function.

Planning is understood in this study in terms of the comprehensive, projective assembly and analysis of data, with a deliberate view to forecasting and developing alternative proposals for concerted action, as they may be fitted into acceptable public policies and may be administered as part of the prevailing

social system. As part of this task planning involves the problem of coordinating pertinent phases of national, regional, State, and local life, and may point out how coordination may be achieved, so as to effectuate in the fullest measure whatever basic policies and objectives that the duly constituted policy makers have adopted.

A variety of source materials has been used in the study—State constitutions, statutes and court decisions, legislative journals, Governors' messages, public documents and reports, yearbooks, directories and manuals, special surveys, biographies and other personal and nonofficial writings, and data obtained by interview and correspondence with public officials and by schedules sent to the State planning boards. The session laws of the State of New York have been carefully examined from colonial days to the present time, while the legislation of other States has been utilized by means of the *Index of Legislation* prepared by the New York State Library for the period 1891–1908 and the *State Law Index* prepared by the Legislative Reference Service of the Library of Congress for the period 1925 to date. There is no comprehensive index to State legislation for the intervening period 1909–24, but the *Public Information Service* (1914 to date) and the *American Yearbook* (1910–19) indicate certain prominent legislative enactments. For certain cardinal facts of the study a specific search has been made of the general statutes and session laws of each State.

Extensive use has been made of such guides to State publications as *Hasse's Index of Economic Materials in Documents of the States of the United States*, including the States of California, Delaware, Illinois, Kentucky, Maine, Massachusetts, New Hampshire, New Jersey, Ohio, Pennsylvania, Rhode Island, and Vermont for the general period 1789–1904. The publications of the remaining States have been checked in Bowker's *Provisional List of the Official Publications of the Several States of the United States* for the same general period, while the more recent State publications have been checked in the *Monthly Checklist of State Publications* prepared by the Library of Congress for the period 1910 to date.

In tracing the development of the State conservation agencies, a special effort was made to obtain all written evidence of their activities. Where published reports could not be located in the Chicago libraries or the Library of Congress, inquiries were made of the secretaries of State, with a copy thereof sent to the State library. Where this search uncovered no reports, it has been concluded that the alleged conservation agency did not function.

The data for the table on present State agencies engaged in the management of natural resources were obtained by inquiries addressed to the State planning boards, National Resources Committee consultants, and (for Delaware) local research agencies. In rough form the data had already been collected from the official manuals and directories issued by the individual States and from directories of special State agencies prepared by the United States Biological Survey, Geological Survey, Forest Service, and Public Health Service. These provisional data were transferred to one-page schedules (Appendix) which were then sent to the executive officers of the State planning boards with the request that they correct and supplement the schedules and return them to Chicago. The schedules have been tabulated as a Check List of State Agencies and Officials Concerned With the Management of Natural Resources, which is believed to represent the first attempt at a comprehensive listing in a single source of all the State agencies that are engaged in the various phases of the management of natural resources.

Acknowledgments.—This study has grown out of an original suggestion of Prof. Charles E. Merriam. Profs. Leonard D. White and Harold F. Gosnell, of the University of Chicago; Charles S. Ascher, secretary of the committee on

public administration of the Social Science Research Council; and Walter H. Blucher, executive director of the American Society of Planning Officials, have all painstakingly read the manuscript in its entirety, saving the author from many mistakes of fact, interpretation, and style, and helping him to sharpen both the focus of his study and the method of his analysis. Prof. John Gaus, of the University of Wisconsin, made the author aware of the unique role of personalities in American planning history and has also read most of the manuscript in its earlier stages.

The land chapter has been read by Prof. A. O. Craven, of the department of history; the mineral chapter by Prof. E. S. Bastin, of the department of geology, and by F. G. Tryon and E. A. Berquist, of the United States Bureau of Mines; the water chapter by the staff of the water section of the National Resources Committee; the legal section by Prof. Kenneth Sears, of the law school. The author has also benefited from consultation with T. V. Smith, M. C., of the department of philosophy, Prof. H. H. Barrows, of the department of geography, Prof. Paul Douglas, of the department of economics, Profs. Newton Edwards and H. G. Richey, of the department of education, Profs. William F. Ogburn and Louis Wirth, of the department of sociology, Dr. V. O. Key, Dr. Marietta Stevenson, of the American Public Welfare Association, Miss Martha Hamaker, of the School of Social Service Administration, Dr. Albert Lepawsky, of the Public Administration Clearinghouse, Dr. Joseph Pois, of Public Administration Service, Lewis Meriam of the Brookings Institution, and Under Secretary Harry Slattery of the Department of the Interior, in addition to numerous officials of the Federal and State governments, especially in the Forest Service, Biological Survey, Bureau of Fisheries, Geological Survey, Bureau of Mines, Office of Education, Bureau of Labor Statistics, and the National Park Service.

The staff of the National Resources Committee—including Charles W. Eliot, Harold Merrill, Robert H. Randall, Robert Hartley, and Charles P. Dake—was remarkably patient with and helpful to the author.

And finally the author wishes to acknowledge the cumulative importance of the daily repartees with his vigorously-minded associates in the social sciences in the University of Chicago on the nature of planning in particular and the world in general.

Where errors, omissions, and exaggerations still remain, the fault lies exclusively with the author, not his counsel, who have striven mightily to keep him off the wrong path.

The American conservation policy is "a consciously designed plan for preserving the natural resources of the country. This rested partly upon the desire to avoid evident waste of assets, and partly upon desire to prevent control by special as opposed to general interests. The broad policy of preserving and protecting the Nation's water power, timber, minerals, and other similar resources, is an illustration on a large scale of drift away from opposition to State interference."

—Charles E. Merriam, *American Political Ideas*,
1865-1917 (1920), page 332.

"The idea of conservation by the government of interests belonging to the whole society has been extended to the conservation of human resources as well. Having familiarized the public with the idea of conserving timber as a matter of national economy, it was an easy step to the idea of conserving human beings and human energy as a matter of practical economy as well as humanity."

—Charles E. Merriam, *Outlook for Social Politics in the United States*, *American Journal of Sociology*, XVIII, page 684 (1913).

PART I. GENERAL TRENDS

Chapter I. THE STATE MANAGEMENT OF RESOURCES

SUMMARY

In the midst of a New World that paid homage to the "legend of inexhaustibility," there appeared little need for governmental efforts toward conservation of the resources of the country. However, with the inevitable passing of the public lands and the official disappearance of the frontier, the State governments began to take stock of their resources and put into administrative practice a series of schemes for the control of river pollution and fish restocking (1860's), game protection (1870's), forest preservation (1800's), prevention of waste of oil and gas (1890's), and the promotion of the people's health, education, and general welfare. These emerging State activities slowly proceeded from mere legislative declaration of policy to fact-finding inquiries, then to growing administrative control of certain important segments of the Nation's resources by the larger units of political authority under the "purchase" and police powers, concomitant with the integration of administrative structures, the coordination of functions, and the professionalization of personnel, until planning has emerged as a regular activity of the modern State.

In the strategy of resources management there may be frequent inter-blending of such control techniques as (a) public ownership; (b) ordering-and-forbidding devices under the police power; (c) education, science, and technology, and (d) the "purchase of consent." Execution of land plans has been largely confined to the technique of public ownership or the purchasing of consent, with some recent experimentation with zoning under the police power. Water control has likewise involved the public ownership technique, while mineral conservation has relied largely upon technology, with some implementation by the police power. The conservation of human resources has been in terms of educational and scientific methods or the ordering-and-forbidding techniques of the police power.

On the whole, the courts have tended to favor the growth of State management of natural resources, whereas the conservation of human resources has frequently met with strong judicial opposition. This different legal fate may be explained by the availability of such theories of law as sovereign ownership and the prevention of waste, both of which have high prestige value in the legal system. Where the management of resources rests entirely on the police power (as in the case of labor legislation), the conflict between laissez-faire individualism and other theories appears in the open. The same conflict may exist with equal reference to the management of natural resources, but its resolution is facilitated within the framework of traditional law,

a tactical advantage that has been fully recognized in the recent trends in the conservation of resources. The long and suggestive background of State planning is illustrated for one State by the study of New York.

The Democratic Setting.—The evolution of the policies and practices of American Government with reference to the management of its resources has possible parallels only in such recently settled countries as Canada and Australia,¹ and is quite unlike the history of resources administration in most European countries. The explanation lies in the distinctive fact of the existence of a huge if diminishing area known as the public lands, the prevailing influences of which upon American civilization have been so eloquently outlined by Frederick Jackson Turner in his studies of the American frontier.

In the midst of "new worlds of virgin land ever just beyond," who could talk seriously about conservation? If some did talk, how could they expect the people to listen and pay heed to their warnings? America was preeminently a country where "mines were to be seized, fertile valleys to be preempted, all the natural resources open to the shrewdest and the boldest."² The frontier was characteristically the era when "borderism had a heyday in which it stole millions, wasted millions, and laid immense areas desolate." It was also the era that "built an empire." An observing German traveling in the America of the period of the Confederation was keenly impressed with the complete absence of legal restrictions on the use and development of resources. "In America there is no sovereign right over forests and game." To anyone familiar with the established system of forest management in his German homeland, this statement implied an immediate corollary, which he proceeded to state, "no forest service."³

Neither the theory of the King's fish and game, the King's forest (and its "broad arrow"), nor the King's mines found favorable root in revolutionary America. The English game laws, which even Blackstone criticized for their harshness,⁴ were not compatible with the "liberty to fowl and hunt" that was formally declared by the constitutions of Pennsylvania (1776) and Vermont (1777). A Georgia judge indignantly refused to sustain a prosecution under the Black Act (designed to protect private game parks) since it was founded on too "tender a solicitude for the amusement and property of the aristocracy of England." How then could it [i. e., the Black Act] apply to a country which was but one extended forest, in which the liberty of killing a deer, or cutting down a tree, was as unrestricted as the natural rights of the deer to rove, or the trees to grow; and where was the aristocracy whose privileges were to be secured?⁵

Sovereign rights to minerals contained in the land had been asserted in New York, only to be practically abandoned in 1789 by giving to the discoverers of such minerals unrestricted rights for a period of 21 years, "notwithstanding that such mine or mines, or ore, shall be pretended or claimed to belong to the people of this State, as the sovereign thereof; any law, usage, or custom, to the contrary notwithstanding."⁶ Half a century later, during the California gold rush,

¹ Cf. S. H. Roberts, *History of Australian Land Settlement, 1788-1920* (1924) and M. Desjardins, "Land Settlement in Canada," *International Review of Agricultural Economics*, IV: pp. 3-49 (1926).

² Frederick J. Turner, *The Frontier in American History* (1920), pp. 212, 220.

³ Jenks Cameron, *The Development of Governmental Forest Control in the United States* (1928), pp. 17, 137.

⁴ *Commentaries on the Laws of England*, IV, 409 et seq. Cf. George P. Marsh, *The Earth as Modified by Human Action* (1882), pp. 349-355.

⁵ *State v. Campbell*, 1 Charlton 166 (1808). An answer to the second question might have been forthcoming in contemporary Savannah society, but no legislation for the protection of the deer was passed till 1891 (No. 683). For the State constitutions, see F. N. Thorpe, *The Federal and State Constitutions, Colonial Charters, and Other Organic Laws*, pp. 3091, 3748 (1909). Cf. the report of the Vermont fish commissioners for 1873-74 (pp. 50-51), where they reviewed the obnoxious features of the game laws leading to the constitutional guarantee. The Rhode Island constitution (I, 17) also includes a guarantee of the "rights of fishery."

⁶ *N. Y. Laws*, 1789, ch. 18.

Judge Field achieved the same result by ruling in *Moore v. Snow* that the doctrine of "royal mines" was incompatible with free American institutions.⁷

Unfortunately, the supply of free and good public lands had to come to an end, forcing democracy to reevaluate both its content and methods. When the country began to take stock of its heritage, it discovered, to its dismay, that the official policy of unrestricted freedom of enterprise in taking over and developing the country's resources had resulted in wanton exploitation and waste and the quick passage of the most valuable forest, land, mineral, and water resources from public to private ownership bent upon its own particular profit without regard to the public weal. The United States Bureau of Corporations reported that in 1870 three-fourths of the standing timber was publicly owned, whereas in 1911 about four-fifths of it was privately owned.⁸ The preservation of the very basis of democratic society demanded that Government enlarge its sphere of activity to take positive steps for conserving the nation's resources, in the same way that democracy demanded civil service reform, the Australian ballot, regulation of railroads, and the curbing of monopoly.

These resultant changes in democratic sentiment were, in large measure, the basic achievement of the conservation movement. The attitude of conservation had come first in point of time in the more settled sections of the country, where the exhaustion of resources had been clearly visible for a long time, and then moved slowly westward, encountering the perennial conflict between the forces of order and development, between conservation and change. With the maturity of settlement and the receding of the frontier (officially in 1890),⁹ the States began to put into administrative practice a series of schemes for the prevention of river pollution and the scientific propagation and restocking of fish, game protection, forest reservation, prevention of waste of oil and gas, and protection and development of the people's bodies and minds by insisting upon a growing number of human standards. The conservation movement popularized these problems as one of the crucial issues of democratic government.¹⁰

The General Pattern of Chronology.—Although it may not be possible to construct any neat evolutionary pattern of the development of the governmental structures and administrative controls concerned with the different kinds of resources, it is interesting to note, roughly, how some of the resources have been recognized in the State governments during different periods of time. Land as a basic natural resource probably is entitled to first place in any chronology of resources agencies, the land offices antedating all the other State agencies concerned with natural or human resources. But the function of the land office rarely stretched beyond the semijudicial disposal of public lands to evidence concern with the long-range results of the administration of the land laws.

Conservation is commonly said to have begun with forestry, but actually the State governments had established administrative agencies for the protection of wildlife during the 1860-70's, more than a decade before the appearance of any forestry agency (1885). If not first in the administrative history of conservation, however, forestry may claim the distinction of rising quickly to dramatic importance in heralding the possibilities of long-range planning of natural resources. Quite a number of the States were interested in exploring the geological wealth of the country from an even earlier period (1820's), but these organizations were usually short-lived or quite intermittent in activity, and less concerned with mineral conservation than with laying the basis for mineral exploration and exploitation. In fact, little was done about mineral conservation

⁷ 17 Calif. 199 (1861), overruling *Hicks v. Bell*, 3 Calif. 219 (1853). *Infra*, p. 8.

⁸ *The Lumber Industry*, 61st Cong., 3d sess., S. Doc. 818, p. 3.

⁹ "The unsettled area has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line," *Compendium of the Eleventh Census* (1890), pt. I, p. xlviii.

¹⁰ Conservation, said Gifford Pinchot, covers "a wider range than the field of natural resources alone" to apply to "the body politic as well as the earth." *The Fight for Conservation* (1910), pp. 48-49.

till the turn of the current century, and even now the governmental management of minerals is largely limited to oil and gas, where its achievements have not been notable.

Of the natural resources, the developmental career of water conservation has been most diversified, starting with the promotion of navigation as a prime function of the State governments, which gradually were replaced by the Federal Government after the disastrous canal experience. State activity emerged next in the water field during the 1860's, when the increasing pollution of rivers threatened fish life, and toward the end of the nineteenth century irrigation became important in the Western States. By and large, however, water planning by the State governments was notable by its absence until recent years.

Education had been institutionally recognized as a State function as early as 1812, health, welfare, and labor in the 1860's, while recreation emerged around the turn of the century. While welfare, labor, and recreational functions of State government had their antecedents in the last century, it is only in the very recent past that they have emerged as major State activities. The very phrase "public welfare" was unknown in State government until 1917, when the Illinois reorganization plan embodied it as one of the principal State departments. It is only since the advent of the social security program that public welfare has come to mean in most States more than mere institutional care of special classes of the population.

The pattern of the growth of management of any given resource tends toward the following: (a) General legislative declaration of policy without provision of any administrative mechanism other than local law enforcement; (b) establishment of a fact-finding agency acting rather independently of existing legislation; (c) gradual accretion of administrative functions by the larger units of authority, particularly over resources that are publicly owned or peculiarly subject to public control; (d) assumption of services for privately controlled resources and gradual shift from the performance of services to the exercise of various degrees of control, as under the "purchase power" or the police power; (e) integration of structures and coordination of functions simultaneously with or subsequent to the professionalization of resources administration; and (f) emergence of coordinating activity.

Of the resources considered in this study, only forests and recreation may have approximated the full course of this sequence. In some States, wildlife management may claim second place. Mineral and water resources lag far behind, while land management (apart from forests and wildlife) is trying to get ahead as yet under the "purchase power," although some fragmentary experimentation with the possibilities of zoning is being conducted.

The Strategy of Resources Management and Its Legal Basis.—It is possible to analyze the strategy of resources management in terms of four main techniques: (1) Public ownership, (2) ordering-and-forbidding devices under the police power, (3) education, science, and technology, and (4) the purchase of consent. In most concrete situations undoubtedly all four techniques may be skillfully interblended, as in game management in the State forests, where the State government owns the land, enforces forest and game regulation thru its police system of rangers, promotes scientific restoration of fish and game, and cooperates with adjoining forest owners in protecting the forests against fire hazards.

A distinction can clearly be made as to cases where the government finds that mere police authority or scientific technology alone may prove inadequate, the former from the standpoint of constitutional law and the latter from the impossibility of performance in view of the constitutional handicap. In order to control such situations, government may be forced to acquire the area involved, as it is daily purchasing huge tracts of land for retirement from agricultural use, or to retain more or less permanently the present status of public lands under a

policy of permanent withdrawal and reservation, or the government may encourage the various interests to accommodate themselves to the need of conservation by the payment of money, performance of services, or adjustment of the tax burden.

The control of some resources exemplifies only one of these techniques to the practical exclusion of the others, as for instance, that of coal, where the outstanding conservational work has been confined to technological improvements in the recovery of the original resource from the earth and its subsequent utilization, or by limiting consumption through the invention of substitutes. Until very recently game conservation exemplified only the ordering-and-forbidding techniques of the game warden, while fish conservation had embarked on its governmental career as a scientific effort at artificial propagation and restoration of fish. Execution of land plans has been largely confined to the technique of public ownership, with some very recent experimentation with the zoning device under the State's police power. Water control and development has likewise involved the public ownership technique. The conservation of human resources has been in terms of educational and scientific methods, reinforced by the ordering-and-forbidden devices of the police power. This statement, however, tends toward an over simplification at least as concerns the present situation as contrasted with earlier administration, for the modern State prefers to perform its manifold functions through no one technique but skillfully invokes all the tools at its command.

Another way of analyzing the situation might be in terms of public and private conservation. Public conservation by definition in this case includes public ownership and may clearly employ the ordering-and-forbidding technique. Science and technology, like guns in war, may be employed in both public and private conservation. However, a vast difference clearly exists between what government may do in managing resources in a proprietary capacity and what it can do in a regulatory capacity under the police power, or what it can do through the purchase of consent. In the earlier period of the American government of resources, when much of the original public domain still remained in governmental ownership, "public conservation" far outweighed the other. In sheer quantity, and more so from the point of view of quality, the problem of conservation has shifted from one largely limited to the public domain, to a mixed public-private problem calling for greater inventive ability in devising and executing the strategy of controls. At times it has been more or less frankly admitted that the most difficult problems in the control of certain resources can be handled only by transferring the ownership thereof back to the public or by nationalization. This step would hardly have been necessary if the original policies of selective reservation of land had been retained, or if land survey and classification could have preceded settlement, as required under the first land ordinances.

The courts have strongly tended to favor the exercise of governmental control over natural resources, whereas the conservation of human resources (with the exception of education and health) has traditionally encountered strong opposition from laissez-faire legalism. The judicial hostility to the development of welfare and labor administration is a well-known chapter in American constitutional history. It should not be implied that public management of natural resources has uniformly been favored by the courts, for variations in judicial fate can be noted according to the different types of natural resources that may be involved and the relative recency with which State government has begun to concern itself about them. But on the whole, there is a markedly different disposition on the part of the judiciary in dealing with governmental control over natural resources as opposed to human resources. What is the explanation?

The management of natural resources is able to depend upon certain legal theories, as sovereign ownership and the prevention of waste, which by virtue

of their high prestige-value in the legal system have traditionally produced favorable reactions from judges who have otherwise objected to the expansion of governmental activities in terms of mere police power. The scope of the latter term—"health, safety, and general welfare"—is sufficiently broad to serve as a legal buttress for the exercise of governmental conservation of natural resources. Police power is the common denominator, not the differential, as it were, in the constitutional theory of the management of resources. Beyond control supportable by these theories, however, the courts have been loath to go, quite in contrast to European theory and practice.¹¹ Land-use zoning is probably the most ambitious current attempt at conservation of natural resources under the police power.¹²

Certain types of land use, however, have been subject to rather strict control during times of emergencies and over limited areas, as in attempts at control of the spread of plant diseases, insect pests, and obnoxious weeds. The rationale is in terms of the prevention of the danger of immediate physical waste, rather than long-run maladjustment. Frequently, the purchase power of government intervenes in the same instance and may practically supplant regulations drawn in terms of the police power by buying off the objectors. Thus regulations for the prevention, suppression, and use of fires obtain reenforcement from tax concessions, demonstrative and cooperative projects, from which the individual may profit more than he loses by subjecting himself to the specific regulations. Only two States are reported to have made statutory attempts at regulating tree cutting, and the laws are conceded to be "not strictly enforced, and probably would not be particularly effective if they were."¹³

The classic statement of sovereign ownership of natural resources, particularly of wildlife, is to be found in Blackstone's *Commentaries*,¹⁴ one of the most widely read books among American lawyers and judges during the formation of American constitutional law. English legal historians have quarreled with Blackstone's analysis, admitting that it may have been law during the early medieval period but vigorously denying that it was the law of England from the time of the Whig revolution onwards, with the possible exception of special regal claims to swans and whales.¹⁵

In America, however, Blackstone's dictum of sovereign ownership of resources was the only theory with which the early judges were familiar, with the result that it has become firmly entrenched in American law, as applied particularly to wildlife and, by a rough analogy, to oil and gas and has also influenced some of the land and mineral laws for the disposal of the public lands. Its acceptance has greatly simplified the problem of sustaining the constitutionality of the regulatory laws which the growth of the government of resources necessarily brought in its wake. According to this theory, if the State owns a given resource in its sovereign capacity in trust for the people, the State may obviously choose whether to

¹¹ In making comparisons with the degree of control exercised by European governments, it is important to recognize the differential theories of ownership in the two systems of common law and Roman law, particularly with reference to minerals.

¹² In 1926 the U. S. Supreme Court in *Euclid v. Ambler Realty Co.*, 272 U. S. 365, sustained the general constitutionality of zoning, thus shifting the point of legal attack to specific defects of particular zoning cases. See R. B. Wertheimer, "Constitutionality of Rural Zoning," 26 *California Law Review* (1938), pp. 175-205, and Walker, *Some Consideration in Support of the Constitutionality of Rural Zoning as a Police Power Measure* U. S. Resettlement Administration, Land Use Publication No. 11, 1936.

¹³ The Virginia cedar rust law, which required the summary destruction of diseased trees in proximity to apple orchards, was upheld in *Miller v. Schoene*, 276 U. S. 272 (1927), where Justice Stone stated, "When forced to such a choice the State does not exceed its constitutional power by deciding upon the destruction of one class of property in order to save another which, in the judgment of the legislature, is of greater value to the public." (At p. 279.) See U. S. Forest Service, *A National Plan for America's Forests*, 73d Cong., 1st sess., S. Doc. 12, pp. 996-1004. The New Mexico constitution (XV, 2) expressly authorizes "such control of private forest lands as shall be necessary for the prevention and suppression of forest fires." Cf. the effective regulation of private forests that are found in Switzerland and the Scandinavian countries. *Ibid.*, pp. 1026-1027, 1032-1035. See also the section entitled "Is Further Public Regulation Desirable in the United States?" pp. 1038-1050.

¹⁴ II, pp. 410-412.

¹⁵ The first criticism of Blackstone was apparently made by Edward Christian in his *Treatise on the Game Laws* in 1817. By the middle of the nineteenth century English legal practice had completely shifted from the theory of royal monopoly to one of landed-gentry dominance so that the English court could rule, in *Blades v. Higgs*, 11 Eng. Rep. 1474 (1865), without even referring to the theory of sovereign ownership, that a land owner per se had such an exclusive right to wild creatures on or flying over his land that he could forcibly recapture them if removed elsewhere.

dispose of it or retain it, and, if a policy of disposition is adopted, the State may prescribe the conditions under which ownership or use may be acquired by others. From a legal point of view, this theory makes it very difficult to question the constitutional validity of the conditions under which the ownership of resources may be "captured" or their use legally controlled, for the State is theoretically giving something away which need not be given away at all.

One of the first cases in which the American courts had occasion to predicate governmental control of natural resources upon the theory of public ownership was that of *Swift v. Maryland*,¹⁶ in which the United States Supreme Court said:

The State holds the propriety of this soil for the conservation of the public rights of fishery thereon, and may regulate the modes of that enjoyment so as to prevent the destruction of the fishery. In other words, it may forbid all such acts as will render it less valuable, or destroy it altogether. This power results from the ownership of the soil, from the legal jurisdiction of the State over it, and from its duty to preserve unimpaired these public uses for which the soil is held.

A State court has stated the theory of sovereign ownership as follows:

The ownership being in the people of the State—the repository of the sovereign authority—and no individual having any property rights to be affected, it necessarily results, that the legislature, as the representative of the people of the State, may withhold or grant to individuals the right to hunt and kill game or qualify and restrict it, as, in the opinion of its members, will best subserve the public welfare.¹⁷

The advantageous legal position into which the sovereignty theory has placed wildlife conservation has also served to defend it against objections of alleged interference with interstate commerce or discrimination against nonresidents. In the absence of congressional consent, such objections ordinarily override state regulation, but in *Geer v. Connecticut*¹⁸ and *McCready v. Virginia*¹⁹ the United States Supreme Court favored the cause of wildlife conservation on the ground that otherwise effective enforcement of State law would be hamstrung, and after all, that which the State theoretically owned it could dispose of as it pleased.^{19a}

Water was also owned by the State in common-law theory. The riparian owner merely has usufructuary rights with respect to rivers and lakes—"the simple use of it [i. e., the water] while it passes along."²⁰ Even in the Western States that have renounced the common-law rules relating to water and its uses, the doctrine of public ownership of water remains intact and is, in fact, specifically reenforced by express constitutional provisions in six States.²¹

Probably the most vigorous judicial enunciation of the theory of sovereign ownership of water occurs in Mr. Justice Holmes' opinion in *Hudson Water Co.*

¹⁶ 18 How. 71 (1855) sustaining a State prohibition of catching oysters with scoop or drag. This case was decided before the passage of the fourteenth amendment with its "due process" clause. Most of the game laws had crystallized in their present form before the courts discovered the extensive meaning of that clause.

¹⁷ *Magner v. People*, 97 Ill. 320, at pp. 333-334.

¹⁸ 161 U. S. 519 (1896). Chief Justice White, who gave the opinion for the court, cited Greek and Roman law, French Galic law, the Napoleonic Code and Blackstone, and also called attention to the place of the State's police power. In 1900 Congress passed the Lacey Act (31 Stat. 187) expressly endorsing the *Geer* case.

¹⁹ 94 U. S. 391 (1877), sustaining a State law prohibiting noncitizens from planting oysters in soil covered by tideswaters. Also see R. H. Connery, *Governmental Problems in Wildlife Conservation* (1935), p. 53, where it is suggested that the need for the ownership theory may lessen with the broadening of the police power.

^{19a} Explicit constitutional language comes to the aid of the four States of Louisiana, Massachusetts, Ohio, and Texas in their management of natural resources in the interest of conservation. In 1912, the Ohio constitution was amended to authorize legislation for the "conservation of the natural resources of the State, including streams, lakes, submerged and swamp lands and the development and regulation of water power and the formation of drainage and conservation districts . . . forests . . . minerals." (II, 36). In 1917, the Texas constitution authorized State "conservation and development of all the natural resources."—(XVI, 51). In 1918, the Massachusetts constitution declared as "public uses" the "conservation, development and utilization of the agricultural, mineral, forest, water and other natural resources of the Commonwealth."—(Amendment XLIX). In 1921, Louisiana made its conservation department a constitutional agency to "protect, conserve and replenish all the natural resources of the State, and to prohibit and prevent the waste or any wasteful use thereof."—(V, 18, 20). From an examination of the few cases arising under these explicit provisions, it does not appear that such explicit language has substantially affected the legal powers of the State.

²⁰ Justice Story in *Tyler v. Wilkinson*, 24 Fed. Cas. 472 (1827).

²¹ Arizona, California, Colorado, Montana, New Mexico, and North Dakota. *United States Census of Irrigation* 1930, pp. 26-29. The Idaho constitution (VIII, 2) authorizes the State to control and develop unused water power. See S. C. Wiel, "Origin and Comparative Development of the Law of Water Courses in the Common Law and in the Civil Law," 6 *California Law Review* (1916), pp. 245-267, 342-371. In his article on the "End of Law as Developed in Legal Rules and Doctrines," 27 *Harvard Law Review* (1914), 195, Roscoe Pound noted the application in game and water law of the theory of sovereign ownership and suggested, "In a crowded world the social interest in the use and conservation of natural media has become more important than individual interests of substance," p. 234.

v. *McCarter*, decided only shortly before the calling of the Conference of Governors in Washington, 1908. Holmes stated:

The State as quasi sovereign and representative of the interests of the public has a standing in court to protect the atmosphere, the water, and the forests within its territory, irrespective of the assent or dissent of the private owners or the land most immediately concerned. * * * The public interest is omnipresent wherever there is a State, and grows more pressing as population grows. We are of the opinion, further, that the constitutional power of a State to insist that its natural advantages shall remain unimpaired by its citizens is not dependent upon any nice estimate of the extent of present use or speculation as to future needs. The legal conception of the necessity is apt to be confined to somewhat rudimentary wants, and there are benefits from a great river that might escape a lawyer's view. But the State is not required to submit even to an aesthetic analysis. Any analysis may be inadequate. It finds itself in possession of what all admit to be a great public good, and what it has it may keep and give no reason for its will.²²

This doctrine was recently given a positive emphasis by the New Hampshire Supreme Court when it upheld the program of the State Water Resources Board. In the course of an opinion stressing the value of "looking ahead" at "future needs," the court stated: "The State clearly may engage in undertakings to develop its resources. It is no less in its interest than to conserve them; what may be saved is not the limit of legislative power; what may be produced is also a proper subject of action."^{22a}

The theory of sovereign ownership has been less clearly developed with reference to minerals, the law of which today usually forms an integral part of that of real property. This is in marked contrast to the Continent, where legal theory had for a long time recognized the ownership of minerals as quite separate and apart from the ownership of the soil, reserving ownership of the former to the sovereign. "In Europe from the earliest times metal mines seem to have been the property of the State or ruling family" in Greece, Rome, and in the Holy Roman Empire.²³ In England there was never quite the same development of the "mines royal." Indeed scattered cases, as in Elizabeth's reign, are to be found when regalian rights to minerals were confidently asserted, but the "Glorious Revolution" quickly quieted these pretensions. Holdsworth concludes that the English kings "never succeeded in making good their claims over all mines to the same extent as the continental kings." The regalian rights were recognized as to gold and silver—in the same way the swan was the regal bird—but coal and the basic metals like iron, copper, and lead all belonged exclusively to the owner of the soil.²⁴

The rule of the "mines royal" was dramatically rejected by an American court, at the time of the California gold rush, as incompatible with American institutions.²⁵ It involved a personal prerogative of the King and not an incident of sovereignty, ran the argument, and hence could not have been transmitted to the American States. There can be no quarrel that the decision was highly

²² 209 U. S. 349. The case sustained the constitutional power of the State of New Jersey to prohibit the transport of water into other States. The U. S. Supreme Court deliberately puts its decision upon the broader grounds (as quoted above) than that urged in the lower court (riparian rights). Cf. *Opinion of the Justices*, 103 Maine 506 (1907), which approved legislation restricting tree cutting on wild or uncultivated but private lands, in order to prevent or lessen droughts and freshets, protect, preserve, and maintain the natural water supply, and prevent the erosion of lands and the filling-up of rivers. The California Supreme Court in *Tulare Irrigation District v. Lindsay Strathmore Irrigation District*, 3 Calif. (2d) 489 (1935), declared that "The protection and conservation of the natural resources of the State are in the general welfare and serve a public purpose," p. 529.

Holmes' principle of sovereign rights has been ruled inapplicable to natural gas and oil in *Oklahoma v. Kansas Natural Gas Co.*, 221 U. S. 229 (1911), and *Pennsylvania v. West Virginia*, 262 U. S. 553 (1923). In *Nebbia v. New York*, 291 U. S. 502 (1934), Mr. Justice Roberts stated, "Regulation of a business to prevent waste of the State's resources may be justified," citing the *Champlin* case discussed *infra*.

^{22a} *Conway v. New Hampshire Water Resources Board*, 199 Atl. 83 (1938), p. 87.

²³ F. G. Trvon and E. C. Eckel (eds.), *Mineral Economics* (1932), p. 84. See also T. A. Rickard, *Man and Metals* (1932), p. 594 where he traces the development of mining law. As of the end of the Middle Ages, the following principles were enumerated: (1) Mineral ownership was separate from surface tenure; (2) the sovereign was the sole proprietor of the mines, and the only person privileged to grant to others the right of working them; (3) if he did not care to operate the mines himself, he retained a part proprietorship in the proceeds; and (4) the management was appointed and controlled by him.

²⁴ Holdsworth, *History of English Law*, I, p. 151. This seems to have been conceded as early as in the reign of Henry III in the thirteenth century when the Forest Charter of 1217 "accorded to every freeman the right to make a warren, or pond, or marl pit, or ditch—in soot, to dig." Rickard, *op. cit.*, pp. 789-90.

²⁵ *Moore v. Snow*, 17 Calif. 199 (1861), overruling *Hicks v. Bell*, 3 Calif. 219 (1853). The opinion was by Field who later became a robust member of the United States Supreme Court.

practical at the time, for a contrary result might easily have been productive of much violence from the gold miners who would not choose to understand that the gold for which they had labored and fought belonged to a "sovereign."

It would be error to conclude, however, that Field's judicial rejection of the sovereign theory has been completely accepted in this country without notable countercurrents, though of a somewhat special or restricted scope, it is true. In fact, the United States Supreme Court, on which Field was serving at the time, recognized the validity of the sovereignty doctrine to a limited extent in the case of *Shoemaker v. United States*.²⁶ This case involved a mineral reservation in the grant to Lord Baltimore, to which it was held that the State of Maryland succeeded in the course of the Revolution and which was ceded in turn to the United States in 1791 at the time of the creation of the District of Columbia.

In oil and gas, however—which are the only mineral fuels over which government has attempted to exercise control—the sovereignty theory was originally invoked to sustain regulations of the conditions under which oil might be reduced to absolute ownership, drawing phraseological analogies to the common-law rule of "capturing" wild animals.

The court speaks of natural gas as a mineral *ferae naturae*, and the first decision relies largely upon the analogy of game and fish laws; the theory being that the title to natural gas does not vest in any private owner until it is reduced to actual possession.²⁷

But the later court decisions sustaining the power of the States to control the use and development of minerals and mineral fuels have introduced another theory—the theory of waste and its prevention—which has tended to supersede the earlier emphasis upon sovereign ownership by way of a tenuous analogy to *ferae naturae*. This later development has also been accompanied by another doctrine, the theory of correlative rights of common property owners.²⁸

The term "waste" is obviously an emotive term—nobody favors waste, least of all judges trained in the common-law system with its cardinal emphasis upon private property and its preservation. Furthermore "waste" is a word of some standing in the common-law of real property, in which it refers to a property tort committed by an occupant of realty that adversely affects persons having future interests in the realty. Logically, this old principle has little in common with present oil conservation statutes, but that may not be important. It is important that the new regulations employ phraseology that is already well established in the existing legal system, although the actual application of the phraseology may be quite new. Like judicial legislation, the conservation statutes may mask their novelty by verbal appeals to accepted principles.²⁹

The concept of waste has since been expanded from purely physical content—for example, the requirement of plugging abandoned oil wells—to definitely economic fields, as the control of oil production by means of proration. Under the proration system a state administrative body allocates among well operators the amount of oil that may be produced in any particular field during a specified time period. This proration scheme has been sustained by the United States Supreme Court in *Champlin Refining Co. v. Oklahoma Corporation Commission*, as a means of conserving an exhaustible natural resource,³⁰ but the courts and the lawyers appear reluctant as yet to sustain compulsory unit-operation of oil fields.

²⁶ 147 U. S. 282 (1893).

²⁷ Ernest Freund, *Police Power* (1904), p. 448. See cases cited by N. Ely, *Oil Conservation Laws* (1933), pp. 3-18, and in his recent article on "The Conservation of Oil," 51 *Harvard Law Review*, p. 1209 (1938).

²⁸ *Lindsay v. Natural Carbonic Gas Co.*, 220 U. S. 61 (1910) and *Bandini v. Superior Court*, 284 U. S. 8 (1931).

²⁹ See *Commonwealth v. Trent*, 117 Ky. 34 (1903), where the court said, "The Legislature may protect from waste the natural resources of the state, which are the common heritage of all," p. 46. In *Henderson Co. v. Thompson*, 300 U. S. 258 (1937), the Supreme Court upheld a statute prohibiting the use of sweet gas in the manufacture of carbon black as an intolerable waste which the State could prevent in the needs of conservation.

³⁰ 286 U. S. 210 (1931). Also see J. H. Marshall & N. L. Meyers, "Legal Planning of Petroleum Production," 41 *Yale Law Journal* 53 (1931), 42 *Ibid.* 702 (1933). The Oklahoma Supreme Court had sustained the proration statute and the commission's orders pursuant thereto in *Julian v. Capshaw*, 145 Okla. 237 (1930). Cf. *Thompson v. Consolidated Gas Utilities Corp.*, 300 U. S. 55 (1937), where the court invalidated a proration order bearing "no reasonable relation either to the prevention of waste or the protection of correlative rights."

Apart from the theories of sovereign ownership and the prevention of waste, the management of natural resources is on the same legal basis as the management of human resources and presumably subject to all the vicissitudes of judicial climate which the police power has so tragically encountered.

*Conservation Trends in New York.*³¹—So many references will be made in the following chapters to the outstanding activities of the Empire State in defining the scope and methods of the State management of resources—admittedly an “epic in public administration”—that an attempt will here be made to relate the career of one State in developing its government of resources as it interweaves to form a picture as a whole. The method of approach is thus not by function—whether land or water, mineral, or human resources—but by the government involved, the State of New York.

Among its sister States, New York has traditionally pioneered in devising and executing far-reaching plans for the conservation of its resources, natural and human. Thus, the first permanent forestry government dates from the New York Commission of 1885.³² The oldest permanent geological survey dates from the New York act of April 15, 1836, which directed the secretary of State to “prepare a plan for the geological survey of the State.”³³ The first game license law was passed by New York in 1864. The first office of a State “superintendent of public schools” was established in 1812 to “digest and prepare plans.” The first State workman’s compensation act was enacted by New York in 1910.³⁴ Along with the States of Louisiana, Nebraska, and Wisconsin, New York shares the distinction of deriving its conservation agency uninterruptedly from the early conservation movement of Theodore Roosevelt’s time. Other examples of the paramount position of New York in resources conservation history could also be cited. DeWitt Clinton and his Grand Vision of the Erie Canal may be taken as a clear example of comprehensive State planning in New York in the early nineteenth century, while Governor Alfred E. Smith’s Commission on Housing and Regional Planning is a distinct planning event in the present century.

Main events in New York’s management of resources

Year	Comprehensive planning	Land	Minerals	Water	Human resources
Before 1800.		Charter privileges of fish and game (1629). Governor Bellomont and pine masts (1698–1700). Protection of deer (1705). Upland game birds (1708). Heath hen (1780) and ruffed grouse (1791). Forest fire law for 4 counties (1743). Statewide forest fire law (1758). “Speedy sales” by land office (1786). Cumulsory fire fighting (1788).	Gold and silver reserved to State (1788). Extensive privileges of discoverers (1789) practically reversed reservation clause.		University of the State of New York (1784). Literature fund (1786). State health grant (1792). State care of felons (1796). State grants for educational purposes (1795–1800).

³¹ In the preparation of this section the author has drawn very heavily upon a publication of the New York Department of Conservation, entitled *Fifty Years of Conservation in New York State, 1885–1935* (prepared by Gurth Whipple for the mid-centennial celebration), and upon the helpful suggestions of Commissioner Lithgow Osborne and his associates in the Department of Conservation, Mr. Wayne D. Heydecker, Director of State Planning, Mr. Harold M. Lewis, N. R. C. Consultant to the State Planning Council of New York, and Dr. Chas. C. Adams, director of the State Museum.

³² N. Y. Laws 1885, c. 283. For a description of the three other States which also experimented with the idea at the same time, see ch. II, p. 70.

³³ *Assembly Journal*, LIX, p. 29. As pointed out in the chapter on minerals, these early State surveys included other items than strictly geological ones. Thus in New York, the Survey filed reports on zoology in 1842, on flora in 1843, and on general agriculture in 1846–59. See list in Hasse’s *Index of New York*, pp. 429–430.

³⁴ New York Laws 1864, c. 426. New York Laws 1812, c. 242. From 1795 to 1800 annual grants for the support of education were made by the State to the localities where matched. In contrast to the other illustrations cited in the text, New York failed to retain this lead by removing the school superintendent from office in 1821, for political reasons, and transferring his function ex officio to the secretary of State until 1854 when the office of “superintendent of public instruction” was established. N. Y. Laws 1910, c. 674. This act was limited in scope, but in 1914 a general law was passed.

Main events in New York's management of resources—Continued

Year	Comprehensive planning	Land	Minerals	Water	Human resources
1800-1850..	DeWitt Clinton and Erie Canal system (1825).	Local game constables (1813). Minimum price set on land sales (1850).	Encourage search for coal pits (1817). Reserved salt Springs (1821). Emmon's survey (1837).	Drainage law (1816). Hydraulic privileges (1823). Other canals: Champlain (1825) Cayuga (1828), Oswego (1829), Chemung (1833), Chenango (1837), Cenesee (1840), and Black River (1850).	Superintendent of public schools (1812) removed from office in 1821. DeWitt Clinton invited Amos Eaton to lecture on natural history to legislature (1818). State library (1818). State asylums for insane (1843). State Normal School opened (1844).
1851-84....	Calvin's surveys (1872). Topographic surveying (1884).	First game license law in United States (1864). Game-law revision (1867). Fish commissioners (1868). Tax abatement for highway tree planting (1869). Park commission (1872). Fish and game protectors (1880). State land purchase (1883). Niagara State reservation commission (1883). Sargent committee on forests (1884).	Plugging of abandoned oil wells (1879).	Drainage activities.	Educational subventions (1851). Limitation of hours on public works (1853). Superintendent of public instruction (1854). Tuition charges abolished (1867). State charities (1867). State museum (1870). Compulsory school attendance (1874). Health office (1880). Labor bureau (1883).
1885-1900..	.....	Forest commission of 3 (1885). Fire appropriation (1887). Forest preserve purchase (1891). Adirondack Park (1892). Fisheries, game and forest commission (1895). St. Lawrence Reservation (1896). Cornell College of Forestry (1898-1903). Interstate Park Commission (1900). Fire warden (1900).	Mine inspector (1890). General mining law (1894). Ventilation and timbering of mines (1897).	Pollution (1892)...	Labor arbitration (1886). State employment bureau (1896).
1901-10....	.....	Hunting license (1901). Game bird farm (1902). State tree nursery (1902). Catskill Park (1904). Professional forester (1908). Fire districts (1909). Forestry instruction at Ithaca (1910). Syracuse (1911).	Purchase of spa (1909).	Water storage commission (1902). Erie Canal remodelled (1903). River improvement commission (1904). Hydrology of New York (1905). Water "plans" (1907). Metropolitan sewage commission (1908). Consolidated drainage land (1909).	<i>Lochner v. New York</i> (1905). Limited Workmen's Compensation Act (1910).
1911-20....	Conservation commission of three (1911).	Survey of State holdings (1915). Park bond issue (1916). Waste land plans (1918). Game census (1918).	Saratoga Springs reservation (1916).	Water power problem (1911). River improvement districts (1915). Hydraulic report (1918). Black River regulating district (1919)	State health council (1913). Workmen's compensation amendment (1913). Central Rural School Act (1914). Child hygiene (1914). Child welfare commission (1920).

Main events in New York's management of resources—Continued

Year	Comprehensive planning	Land	Minerals	Water	Human resources
1921-30 . . .	Reclamation conference (1922). Conservation week (1924). Conservation fund (1925). Report on regional planning and housing (1926). Administrative reorganization (1926). State publicity bureau (1929).	Oyster sanitation plant (1922). State-wide fire administration (1923). Park council (1924). Special forests (1924). Fire weather investigations (1925). Game refuges (1926). Ruffed grouse survey (1929). Reforestation commission on abandoned farms (1930). Game experiment station (1930). Hewitt reforestation amendment (1930).	Saratoga Springs commission (1930).	Water power commission (licensing) (1921). Water control commission (1922). Special report on stream pollution (1923). Delaware River compact (1925). Water survey plan (1926). Water power and control commission (1927). St. Lawrence power development commission (1930).	Labor commissioner (1921). State aid for health (1923). Relief bond issue (1923). 8-hour day, 48-hour week (1927). Public welfare law of 1929. Old-age pensions (1930).
1931	Advisory council (1931). County planning law (1932).	Airplane fire fighting (1931). Reforestation habitat studies (1933).		Power authority; tristate treaty commission (1931).	Welfare aid (1931). Minimum wage (1933).

The idea of the Erie Canal was not originally proposed by Clinton, but the fact of its building is in large measure due to his untiring efforts and far-sighted vision. It appears to have been first advocated by Jesse Hawley in 1807, in a series of essays or letters written to different New York newspapers. The legislature promptly appointed a commission (of which Clinton was a member) to make a survey, and it reported in 1811, favoring the construction of an artificial canal instead of improving existing natural waterways. Application was made for Federal aid, supported by resolutions of the legislature of Ohio and Michigan, part of the hinterland which the proposed canal would open up. The War of 1812 intervened to show the tragic need in the growing Nation for more effective facilities of communication, but still no national aid was forthcoming, despite the fact that the States of Vermont and Kentucky also expressed interest. In 1817 the New York Legislature decided that the State's resources were ample to undertake the job without outside help and voted the money with which to begin actual construction. The canal as finished in 1825 was more than 363 miles in length and equipped with some 80-odd locks which were "passable by boat, in ordinary times, in 4 minutes." It is one of the paradoxes of history that the city which was destined for national supremacy by the very fact of the canal actually voted against the bill of 1817 which provided the wherewithal.³⁵

In decided contrast was the vision and understanding of New York's Governor who saw how the canal opened upon a splendid natural highway—the Great Lakes—from which the agricultural products of the Western States could be exchanged for the industrial goods of the seaboard, under ideal conditions of complementary service and division of labor. Clinton visioned the canal as far more than an engineering task, difficult as that was. The completion of the canal was destined to effect an economic and a political revolution, not merely in the State of New York but in the Nation at large. In his *View of the Grand Canal*, delivered on the ceremonious opening in the fall of 1825, Governor Clinton prophetically declared:

³⁵ This account has been adapted from B. H. Meyer, *History of Transportation in the United States before 1860* (1917), pp. 180-195. Also see N. E. Whitford, "The Canal System and its Influences," and J. P. Riggs and R. M. Faust, "New York Becomes the Empire State," in *History of New York*, V, pp. 297-336 and VI, pp. 323-363 (1933-37).

As a bond of union between the Atlantic and Western States, it may prevent the dismemberment of the American empire. As an organ of communication between the Hudson, the Mississippi, the St. Lawrence, the Great Lakes of the North and West, and their tributary rivers, it will create the greatest inland trade ever witnessed. The most fertile and extensive regions of America will avail themselves of its facilities for a market. All their surplus productions, whether of the soil, the forest, the mines, or the water, their fabrics of art and their supplies of foreign commodities, will concentrate in the city of New York, for transportation abroad or consumption at home. Agriculture, manufactures, commerce, trade, navigation, and the arts, will receive a correspondent encouragement. That city will, in the course of time, become the granary of the world, the emporium of commerce, the seat of manufactures, the focus of great moneyed operations, and the concentrating point of vast, disposable, and accumulating capitals, which will stimulate, enliven, extend, and reward the exertions of human labor and ingenuity, in all their processes and exhibitions. And before the revolution of a century, the whole island of Manhattan, covered with habitations and replenished with a dense population, will constitute one vast city.

The historian Turner has commented that, "Sanguine as were Clinton's expectations, the event more than justified his confidence."

The decrease in transportation charges brought prosperity and a tide of population into western New York; villages sprang up along the whole line of the canal; the water power was utilized for manufactures; land values in the western part of the State doubled and in many cases quadrupled; farm produce more than doubled in value. Buffalo and Rochester became cities. The raw products of the disappearing forests of western New York—lumber, staves, pot and pearl ashes, etc., and the growing surplus of agricultural products, began to flow in increasing volume down this greater Hudson River to New York City. The farther west was also turning its streams of commerce into this channel. The tolls of the canal system were over half a million dollars immediately upon its completion; for 1830 they were over a million dollars.³⁰

With the passing of the vision of Clinton and its far-reaching realization, the next item of planning interest in New York comes about 50 years later, in 1872, when Verplanck Colvin set out to map the Adirondacks, the geographical knowledge of which was both limited and confused.

Colvin had many grandiose plans. He advocated the scheme of Professor Benedict of taking water from the Raquette River watershed into the Hudson River through a canal from Long Lake to Catlin Lake. He nursed a project of damming the Hudson above the junction with the Schroon River for water storage; he proposed a dam near the Sacandaga near Northville, now a reality. He endorsed a project for an aqueduct to supply the towns along the Hudson River with the pure waters of the upper Hudson, a project conceived by T. J. Fanning, engineer, who visualized a long marginal city extending the length of the Hudson from the Mohawk to New York which would need this supply. Colvin, as before mentioned in this history, was a protagonist of the park idea. During a speech in New York on this subject he had on the table ice and water from the Adirondacks.

Coincidentally with Colvin's exploration, the legislature created a State park commission "to inquire into the expedience of providing, for vesting in the State, the title of the timbered regions * * * and converting the same into a public park." In its report in 1873, the commission recommended that spoliation be immediately stopped and that no further alienation of the wild lands take place until the question of establishing a forest preserve had been decided. The report was rather promptly forgotten, except for citation in gubernatorial messages which were, in turn, forgotten.

A decade later, another committee, headed by Prof. Charles Sargent, who had recently completed a forest inventory for the 1880 census, reported definite recommendations for the management of State lands. The report fell on such receptive ears that when, somewhat modified, it was sponsored by the New York City association, it resulted in the bill (1885) which forms "the foundational law of conservation in the State."

In contrast to most other States (which contented themselves with investigations of forests), New York embarked immediately upon a policy of forest reservation and management of publicly owned forest lands, principally in the Adirondacks. The pressing objective, as it appears from the legislative record,

³⁰ *Rise of the New West* (1906), pp. 33-34. Unlike most of the other State canals built during the era of "internal improvements," the Erie Canal made a good financial showing, especially during the early period. See H. G. Moulton, *The American Transportation Problem* (1933), pp. 430-431.

was to conserve and regulate the water supply of the State.³⁷ And this purpose has been cited as the explanation of the State's strong prejudice against opening the reserve to prudent lumbering—a prejudice which was enacted into constitutional form at the constitutional convention of 1894 in the famous section VII-7. This section provides that—

The lands of the State now owned or hereafter acquired constituting the forest preserve as now fixed by law, shall be forever kept as wild forest lands. They shall not be leased, sold, or exchanged, or be taken by any corporation, public or private, nor shall the timber thereon be sold, removed, or destroyed.^{37a}

This sweeping language of the amendment—which has been described “as the best loved and best hated State law”—was unanimously adopted by the convention. Strictly construed, as the attorney general pointed out in 1915, the amendment would prevent the actual practice of forest and game management by forbidding the removal or clearing of waste material or the erection of game refuges. Four amendments to section VII-7 have been enacted—all of relatively minor import—while attempts at modifying the sweeping prohibition have repeatedly failed. In its *Annual Report for 1936*, the Division of State Planning recommended:

Careful study of the constitutional provision prohibiting any timber cutting whatsoever in the Adirondack and Catskill Parks should be made lest its too strict interpretation defeat the original sound purpose. Perhaps to further the original purposes, the conservation department should be given limited authority to provide artificial lakes and public camp sites and to safeguard the deer and wildlife by timber slashings and the planting of appropriate wild shrubs and food trees.

In 1911, when the importance of the “conservation movement” in both the national and the State scene was waning, New York established a conservation commission of three members,³⁸ unifying in one agency control over lands and forests, wildlife, water power, and parks. With the possible exception of the division of water power, whose administrative position is somewhat unique,³⁹ all the major conservational activities of the State of New York are centered in one strong department, administered by a staff selected on the basis of civil service. The subsequent development of this department appears sufficiently from the attached chronological chart for the New York government of resources.⁴⁰

When Gov. Alfred E. Smith was returned to office in 1923 he sponsored the establishment of a temporary State commission on housing and regional planning to inquire into the problem of housing shortage that was so acute in the early 1920's. In addition to its several reports and studies in the housing field, the

³⁷ See *National Plan for American Forestry*, pp. 756-762, for a critical analysis of New York forestry.

^{37a} Cf. the Virginia constitutional provision (XIII, 175) providing that the natural oyster beds of the State shall not be leased, rented, or sold, but held in trust.

³⁸ In 1895 (c. 395) the fisheries commission had been merged with the forest commission to constitute the new fisheries game, and forest commission. In 1903 the first single commissioner was appointed, reverting back to a multiple head in 1911. In 1915 the principle of the single commission was permanently established. The explanation is political, i. e., the Governor wanted to get rid of certain incumbents, and this could apparently be accomplished only by a reorganization. The organic act is that of 1911 (c. 647), as amended generally in 1928 (c. 242) when the departmental form superseded the commission.

³⁹ At its head is an interdepartmental commission consisting of the commissioner of conservation, the superintendent of public works, and the attorney general. New York Conservation Law, sec. 396.

⁴⁰ In his 1935 annual report, Commissioner Osborne forcefully pointed out: “The application of conservation principles necessarily must step upon some private toes. Practices which have been permitted in the past will have to be stopped entirely, such as excessive grazing on public lands and perhaps even excessive timber cutting on private lands and certainly the private development of public water resources without governmental supervision. Up to the present time all governments, national, state, and local, have hesitated to invade private property or to change the conception of property rights. In the past when a natural resource has been threatened it has been the policy of the Government to preserve that resource by purchasing the land, the franchise, or the vested right held in that resource by private interests. No public treasury, however, can possibly stand the expense of acquiring all the property upon which conservation must be practiced if resources are to be saved. Therefore some further invasion of what have been regarded in the past as private property rights must take place if conservation is to become entirely effective. * * * The fitting of our ideas into a new form is likely to be a little painful and it is certain that many whose minds are hardened in the old mold will not be able to adjust themselves, but the increasing application of the conservation idea is not only a certainty but a necessity. The future of American wealth absolutely depends upon the expansion of conservation activity. Fortunately an increasing number of people is realizing this every year. Still more fortunately this number has increased very rapidly in recent years. The sportsmen, particularly of the Eastern States, were among the first to accept restrictions upon their individual activities. Land owners and corporate interests have been less tractable but the erosion problem is beginning to convert them as well to the more modern trend of thought” (p. 23).

commission engaged in an exploratory investigation of the "forces which have shaped the economic history of the State" in order to "find a basis for State planning." The results of these studies were transmitted to Governor Smith on May 7, 1926, by Mr. Clarence Stein, chairman, who had been assisted by Messrs. Henry Wright, Benton MacKaye, and George Soule.⁴¹

Somewhat before the submission of this small (only 82 pages) but very fascinating report, Governor Smith had made public references to the need for a revitalized State government deliberately to engage in *State planning* as a permanent function. In his radio address to the first annual State conference on regional planning in session at Buffalo, Governor Smith had remarked:

We are too likely to think that cities alone are capable of planning. * * * The planning of communities and the planning of the State is probably the greatest undertaking we have before us. It is the making of the mold in which future generations will be formed.

And in his great message to the legislature in 1926 outlining a program of State administrative reorganization, Governor Smith again stressed the use of comprehensive State planning:

With the development of our great water power resources, our port facilities, and the tremendous growth of private industries, we feel the *pressure of considering plans for the whole State that will relate all these activities effectively to one another.* The State bureau of housing and regional planning has done pioneer work in this field, and I have no doubt that in the reorganization of the Government regional planning will be provided in such manner as to keep it in close contact with the executive branch of the Government, making use of the special knowledge of the department heads concerned and also of outside expert assistance.

In seeking to outline the objectives and methods of State planning, the report of Governor Smith's commission made very skilful use of a concept borrowed from the English sociologist Patrick Geddes—the "valley section." In New York State there are two interconnected valley belts—the Hudson and the Mohawk Valleys, connecting the Atlantic Ocean with the Great Lakes—in which four-fifths of the people live on one-fifth of the total land area of the State. The development of New York was dramatically traced in terms of the history of the Hudson-Mohawk Valleys, and how they had been affected by the successive forms of energy—water power, steam, and electricity. The State appears to have passed through two epochs and is about to emerge into a third. The characteristics of these epochs may be briefly summarized as follows:

EPOCH I. 1840–80. State-wide activity and intercourse: Rapid development of natural resources; small towns economically independent; industry served by local water wheels and canal system; all widely distributed over the State. Toward end of period drift to new rail lines had set in.

EPOCH II. 1881–1920. Concentration along main line transportation: Development of central rail routes, change of industry to steam power and competition in agriculture of fertile west combine to concentrate growth in central Valley Belt and undermine the industrial prosperity of towns off main-line transportation.

EPOCH III. The possible state of the future in which each part serves its logical function in support of wholesome activity and good living: Comparable in importance with the railroad and the steam engine in determining the character of development in the second industrial epoch are the modern factors of the automobile, good road, and electrical transmission line. These modern forces do not portend a return to the widely distributed development of the first epoch. Rather they will lend themselves to a more effective utilization of all of the economic resources of the State and to the most favorable development of areas especially adapted to industry, agriculture, recreation, water supply, and forest reserve.

The commission was commendably modest in putting forth the product of its efforts: "This report is not a plan. It is a collection and analysis of some small part of the final data that will serve as a basis of future planning." The future planning, it was recommended, could "best be accomplished by a planning board in the executive department," composed of "the heads of the several State departments charged with the expenditure of funds appropriated for permanent public

⁴¹ New York Commission of Housing and Regional Planning, *Report to Gov. Alfred E. Smith*, May 7, 1926.

improvements" and representatives from the local planning boards authorized by the law of 1925. The objectives of this planning board were stated to include, among others, the following:

To broaden out the valley belt, to develop logically the undersettled regions, to give aid to farming and lumbering, to prevent further overcentralization in cities while assisting economy for the manufacturers by proper use of hydroelectric power, to coordinate water supply and to furnish a proper basis for local action.

The "final aim of the State plan" was stated as follows:

With the powers that are now at our command, with the technical insight and the social vision which the State can now summon to its service, we may reverse this situation; instead of being the passive creatures of circumstance, we may become more and more the creators of our future. By using nature and machinery intelligently, we can make them serve our human purposes.

The concrete achievements of the commission on housing and regional planning, before it was superseded by the State housing board, are principally to be found in the stimulation of local planning efforts. It secured the passage of legislation enabling local authorities to establish planning commissions,⁴² and it saw two very active agencies come into being, as a result of its efforts—the Niagara Frontier Planning Board and the Monroe County Planning Commission. Unfortunately its successor, the housing board, was forced to limit its interest in the cause of comprehensive planning to promoting housing, principally through the device of limited-dividend corporations (so far established only in New York City.)⁴³

In 1931 Gov. Franklin D. Roosevelt appointed a commission of rural planning and housing to study the decentralization of population and industry. In his address to the American Country Life Conference meeting at Ithaca, Governor Roosevelt outlined among other objectives the following:

1. That the commission explore the possibilities of the enlistment of private capital to aid in the establishment of rural homes within a reasonable distance of industry.

2. That the commission make recommendations as to experiment by the State alone or by the State with the cooperation and assistance of private capital in establishing wholly new rural communities of homes for workers on good agricultural land within reasonable distance of which facilities shall be offered for the establishment of new industries aimed primarily to give cash wages on a cooperative basis during the nonagricultural season.

If we find that the movement of workers to rural homes ought to be encouraged, then it seems to me that we ought to find means of meeting the needs of those who wish to establish themselves in the country. Their requirements suggest themselves to me as follows: First, Information as to the right type of home to build; second, Guidance and assistance in obtaining the most economical use of funds in acquisition and construction; third, Advice as to the right area of land to be acquired; fourth, Assistance in financing.

When the National Planning Board suggested to the State of New York in the latter part of 1933 that it create an official agency for State planning, the Board referred to this rich background upon which New York could draw.

⁴² N. Y. Laws 1925, c. 539.

⁴³ For the details of the activities of the State Housing Board, see Edith E. Wood, *Recent Trends in American Housing* (1931), pp. 202-204, 259-273.

Part II. SPECIAL TRENDS

Chapter 2. LAND

SUMMARY

Many of the principal techniques of land-use planning (as land survey before settlement or specific reservation from settlement) were fully recognized during the Colonial period and were, in fact, incorporated in the early laws for the disposition of the public domain according to a "systematic plan." Since these techniques were hardly acceptable to the prevailing frontier conditions, they were flagrantly violated and shortly repealed. A comprehensive system of land classification (into areas suitable for ordinary farming, irrigation, grazing, lumbering, and mining) was proposed by Major Powell, but it went unheeded. Such land-settlement activities as were undertaken by State promotional agencies were largely designed to serve the needs of railroad profits and land speculation. Post-World War land-settlement agencies (designed primarily to aid returning veterans) have been almost unmitigated failures. On the positive side, distinct progress in technical land planning has been made by the Michigan Department of Conservation (starting in 1921), and similar work has been taken up in other States, notably in New York and Wisconsin.

Wildlife management was usually the first step in the State conservation of natural resources, starting with specific police legislation during Colonial times and evolving from a system of special enforcement officials at the local level during the early period of statehood to the establishment of State-wide administrative agencies (1870), especially in the New England region, whence the institutional pattern of wildlife conservation rapidly spread to the rest of the country. Forest management likewise had its origin in Colonial times in legislation encouraging tree planting, restricting tree cutting, prohibiting fires, establishing preserves, and experimenting with cooperative forestry. Permanent institutional agencies for forest management derive from the New York commission of 1885, but even then forestry did not become a regular function of most State governments until after the passage of the Weeks Act of 1911 which made available Federal aid. Probably the most comprehensive efforts in State resources conservation are to be found in forest management.

The fundamental American land policies have not evolved without some planning. From their very inception they have characteristically, and at times quite comprehensively, looked far ahead at an ideal—the quick settlement of a continent under such conditions that most newcomers might more or less adequately participate in sharing the traditional promises of American life. It may be possible to quarrel with the validity of particular types or examples of Ameri-

can land policy, but any denial of the actual presence of planning must ignore a whole series of rather obvious facts, one of which is the present map of the United States, partitioning off the States from one another along straight lines drawn by the surveyor's ruler. It may not have been a good plan, but it was planning nevertheless.

It is the purpose of this chapter to trace broadly (a) the origins and trends in the general land policies, (b) the rise of the techniques of survey and land classification without which basic land planning is meaningless, (c) land economic inventories, and then three special phases—(d) wildlife, (e) forests, and (f) parks—will be presented to show how three traditional outposts of resources conservation have grown from the earliest times to dominate strongly the whole sphere of the governmental management of natural resources.

Public Land Techniques and Policies.—The major contribution of the colonial period to the technique of land planning was the invention of the rectangular survey, which was generally employed by New England towns and also in Carolina and Georgia where—

in one or another of their plans can be found such modern, national ideas as survey previous to disposal, square units of territory, square subdivisions, and the section of 640 acres.¹

Under the New England policy of compact settlement considerable attention was paid to laying out communities in relation to surrounding land uses; no one could engross the best lands for himself, and as the town grew the people shared in each division of the unappropriated land.² Lands were specifically set aside for school needs and other community wants. In the South, on the other hand, where scattered settlement was favored, the laws may have required regularity in form of settlement, but surveys did not usually precede settlement, and a few men were able to obtain "virtual monopoly of the choicest land."³

The precedents for the rectangular survey fell conveniently into the hands of the committee appointed under the Confederation to draw up a land ordinance, including in its members Thomas Jefferson, "fresh from * * * planning the bounds between Pennsylvania and Virginia according to a new scientific scheme by means of astronomical observations."⁴ The resulting ordinance of 1784 required as a condition of sale that the lines of the familiar township surveys be straightened to "run invariably east, west, north, and south," thus contributing to the security of land titles, and making for comparative simplicity in conveyance procedure. In the 1785 ordinance, sec. 16 of each township was reserved for schools, one section for religious purposes, and four other sections held for future disposition by the Congress, in addition to reserving one-third of the product of all gold, silver, and lead mines.⁵

With the formation of the Federal Government in 1789 and the gradual surrender of the claims of the seaboard States to the western interior, the issue was presented of what should be the Federal policy for disposal of these public lands. Two widely different plans were current—called the Army and Financiers' Plans respectively,—for local or national ownership of the unappropriated lands. In the very first session of Congress the establishment of a Federal land policy and the location of its machinery of administration in the western section were debated. When at the next session a petition was presented for purchasing a

¹ A. C. Ford, *Colonial Precedents of the National Land System* (1908), pp. 25-26.

² B. H. Hibbard, *A History of the Public Land Policies* (1924), pp. 36-37.

³ Ford cites a North Carolina Act of 1777 ordering that every survey should be bounded by natural boundaries or right lines running east and west and north and south, but it was "neutralized by the permission to use natural boundaries as an alternative." *Op. cit.*

⁴ *Ibid.*, p. 82. "There can be little doubt that he saw in this land question another opportunity for carrying out his theories and of establishing this new country on the most enlightened principles."

⁵ In 1785 the Congress appointed a surveyor for each State to operate under the direction of the geographer (appointed in 1781). But after surveys of four out of the seven ranges had been made sales began, in this way defeating the provision against settlement before completion of the surveys. Hibbard, *op. cit.*, p. 41.

50,000-acre tract by a Mr. Dobbyn of the "Kingdom of Ireland," Boudinot, of New Jersey, sensibly pointed out that—

The business of selling lands was of considerable consequence. * * * If they went into a desultory mode of selling lands they might do material injury. He wished a general and systematic plan might be adopted, which should not be receded from.⁶

In response to the congressional request to prepare a uniform plan of land disposal, Hamilton filed a report 6 months later, favoring a modified system of indiscriminate location of settlement. Not so well prepared as his famous report on manufactures and seeming more impressed with the expediciencies of the moment than the needs of a long-range plan, Hamilton's report stated in a characteristic fashion the land attitude of eastern finance, foreshadowing the main emphasis of the American public land policy for the first half century of the Nation's existence.

In the formation of a plan for the disposition of the vacant lands of the United States there appears to be two leading objects of consideration: One, the facility of advantageous sales, according to the probable course of purchasers; the other, the accommodation of individuals now inhabiting the Western country, or who may hereafter emigrate thither. The former, as an operation of finance, claims primary attention; the latter is important, as it relates to the satisfaction of the inhabitants of the western country.⁷

In its official origin the American public land policy seemed to be primarily concerned with the revenues to be obtained from the Federal domain, and was called by such financial terms, as "credit" and "cash sales" systems.

But the West wanted land and it wanted it cheap. By 1828 the Public Lands Committee of the House was prompted to defend the squatter as entitled to "a privilege greater than other purchasers," because he rendered—

a benefit to the public, who by his enterprise and industry has created to himself and his family a home in the wilderness * * * and brought into competition lands which otherwise would have commanded no price and for which there would have been no bidders, unless for his improvements.⁸

In 1841 Senator Benton's bill for preemption—shrewdly designated the "log cabin bill"—was passed, over the mild opposition of the seaboard submitting more or less to the inevitable, for both the Whigs and the Democrats had committed themselves to some such measure in the last Presidential election. Benton's bill provided for "permanent prospective preemption," as its title read, and thus inaugurated the land policy that remained dominant in American history for almost a century—settle the lands quickly by placing them in private ownership and on the tax rolls. This underlying policy was exemplified in the graduation law of 1854, the famous Homestead Act of 1862 and its successive variations.⁹

The public lands policies evinced little governmental concern with the specific location and establishment of settlement, but left any and all "guidance" and control to private developmental and speculative enterprises and officialized immigration bureaus blaring forth rosy (if untrue) facts of the "resources of the State"

⁶ The proposal was presented in the House by Mr. Scott of Ohio on May 28, 1789. He opposed the system of large sales, objected to the great cost of surveys, and proposed to sell land in small quantities, with the purchasers paying the cost of surveying. *Annals of Congress*, I, p. 415. It was promptly sidetracked by Gerry who proposed a committee of investigation, whereupon "a desultory conversation arose." *Ibid.*, p. 632.

⁷ *American State Papers, Public Land*, I, p. 4.

⁸ Quoted by Hibbard, *op. cit.*, pp. 151-152, who added, "one could well believe the above words formed by a committee at some squatters' meeting in Illinois or an enthusiastic editor in a frontier village."

⁹ Cf. National Resources Committee, *Supplementary Land Planning Report*, pt. VII, pp. 60-75.

Land skimming or soil exhaustion as a deliberate policy has been a settled agricultural practice in America from colonial times. See A. O. Craven, *Soil Exhaustion as a Factor in the Agricultural History of Virginia and Maryland, 1606-1860* (1926). Traditional prejudice had strongly fought attempts to replenish the soil by fertilization. When the lands failed—as the growing number of abandoned farms, even in the pre-Civil War period gave poignant evidence of—the people emigrated to fresh lands. The "wave of immigration passed like a devastating scourge." This policy was despite the fact that many of the techniques of soil improvement were known to "the more intelligent and progressive farmers of the South from a very early period, and failure to employ such methods was due rather to lack of motive than to lack of knowledge." See L. C. Gray, *History of American Agriculture in the South to 1860* (1933), pp. 198-199, 446-448, 800.

"It was in vain that the American proclaimed to the heavens that he loved his rocks and rills, his woods and templed hills: his actions were a derisive commentary on these pious words." Lewis Mumford, *The Brown Decades* (1931), p. 75.

for the "guidance of capitalists and emigrants." Immigration bureaus have been reported for such diversified States as Maryland, Georgia, Wisconsin, and in at least nine States the promotion of immigration was made a constitutional function.¹⁰ In Colorado the immigration bureau was recently consolidated with the State planning agency. During the 1920's, especially after Secretary of Commerce Hoover began the enormous expansion of the Bureau of Foreign and Domestic Commerce, a number of States began officially to undertake chamber-of-commerce functions in the promotion of land settlement and development, as through the New Jersey, North Carolina, and Virginia Departments of Conservation and Development, the Alabama Industrial Development Board, the Greater Pennsylvania Council, the Maine and Massachusetts, and New Hampshire Development Commissions, and the South Carolina Natural Resources Commission.¹¹

When shortly after the World War the country was confronted on an unparalleled scale with the problem of absorbing returning service men, one of the methods proposed was guided land settlement. Between 1917 and 1923, approximately 13 States passed laws providing for purchasing, improving, and selling agricultural lands to the veterans under preferential contracts. Since no financial assistance (other than training pay) was actually forthcoming from the Federal Government, only 6 States out of the 13 actually attempted to carry the plan beyond the paper stage. These State attempts at developing and selling "ready-made farms" appear to have "failed to accomplish the ends contemplated." In the case of a few projects (as at Delhi, Calif.), initial success attended the venture, but with the falling prices of farm crops, general post-war agricultural distress, and high construction costs, these few temporarily successful experiments also collapsed. In 1929 the California Legislature took steps to withdraw State participation in land settlement, and the final report for 1931 placed the cost to the State at \$2,500,000, excluding interest. The story of the remaining 5 States is, with the notable exception of Oregon, equally or more dismal. Even in Oregon whose demonstration farms were reported on a paying basis, no new demonstration farms appeared to have been added by the end of 1931.¹²

The States have also sought to control settlement by discouraging development of poor lands through blue-sky laws in practically all the States, licensing real-estate dealers in 27 States, supplying information to prospective settlers, and most recently by means of the zoning device.¹³ In some States, notably Michigan, Montana, and Washington, provision has been made for technical examination and certification of land colonization projects on the request of the colonization company, but little use thereof is reported. The zoning technique undertakes to regulate under the police power the various uses to which rural land may be put, i. e., whether forestry or open to agriculture. It was first extended to nonurban situations by Wisconsin in the case of Oneida County in 1933, and has since been adopted by twenty-three other rural counties in the State.¹⁴

Land Classification and Withdrawal.—It is rather difficult to understand how so little progress was made in the technique of land planning after the invention and practice of the rectangular survey at the very beginning of the national land system. As will be shown in the chapter on minerals, early efforts

¹⁰ Md. Laws 1896, c. 295; Ga. Laws 1895, p. 104; Wisc. Laws 1893, c. 235. Made a constitutional function in Alabama, Delaware, Florida, Idaho, Louisiana, North Carolina, Texas, Virginia, and Washington. On the other hand, one State (Texas) later constitutionally forbade the State to engage in such activity. Most of the States later abolished the boards. See also B. Henderson, "State Policies in Agricultural Settlement", *Journal of Land and Public Utility Economics*, II, 284-296 (1926).

¹¹ Ala. Agricultural Code of 1927; Me. Laws 1935, c. 180; Mass. Laws 1929, c. 351; N. H. Laws 1931, c. 92; N. J. Laws 1915, c. 241; N. C. Laws 1925, c. 122; Pa. Laws 1931, No. 131; S. C. Laws 1929, No. 226; and Va. Laws 1926, cc. 169, 368.

¹² W. A. Hartman, "State Land-Settlement Problems and Policies in the United States," *Department of Agriculture Technical Bulletin No. 357* (1933), pp. 35, 45. The 6 States were California (1917), Washington (1919), South Dakota (1919), Arizona (1921), Minnesota (1917), and Oregon (1919). The other 7 States whose legislation remained ineffective were Utah (1917), Colorado (1919), Idaho (1919), Wisconsin (1919), Montana (1921), Michigan (1923), and South Carolina (1923).

¹³ *Supplementary Land Planning Report*, pt. VII, pp. 134-135.

¹⁴ Wisc. Laws 1929, p. 468. See Rowlands and Trenk, *Rural Zoning Ordinances in Wisconsin* (University of Wisconsin Extension Circular 281, 1936).

had been made to reserve in part gold, silver, lead, and other mineral deposits on the public land, but no mechanism existed for determining where such deposits were. In most of the Territories surveyors-general were usually designated by the Congress to make perfunctory surveys. The first such officer was appointed for the Northwest Territory in 1796, where he continued to function till shortly before the Civil War (1857); and by 1878 surveyors were listed as existing at some time or other in 25 of the public-land States.¹⁵ These surveys were concerned only with the location of the land according to the famous technique of straight lines, with no attention being paid to the different qualities of the land. That Congress was not entirely unmindful of the different kinds of lands in the public domain appears from the Swamp Land Act of 1849 which transferred to the State of Louisiana overflowed lands "found unfit for cultivation"—which Hibbard cites as "first legal recognition of a subclass" of the public lands. The failure to apply this broad standard led to flagrant frauds by which huge areas passed into State and private ownership.

Maj. J. W. Powell, Director of the United States Geological Survey, clearly pointed out the difficulty:

An examination of the laws * * * will show that the classes of lands * * * are therein recognized, and in the administration of the laws relating to these lands those belonging to each specific class must be determined; but no adequate provision is made for securing an accurate classification, and to a large extent the laws are inoperative or practically void.¹⁶

In his famous report on *Lands of the Arid Regions of the United States*, Major Powell recommended that the public domain be promptly classified into areas suitable for ordinary farming, irrigation farming, grazing, lumbering and mining. The recommendation went unheeded, "and without more vigorous enforcement than was given to most of the land laws would have accomplished little."¹⁷

The organic act of the Geological Survey provided that it should direct "the classification of the public lands," but Director King stated in his first report in 1880 that he had "concluded that the intention of Congress was to begin a rigid scientific classification of the lands of the national domain," largely limited to geological uses. This interpretation, which was based on a fear lest the Geological Survey "supersede the machinery of the land office," prevailed until 1906, when the pressing needs of the Department of the Interior for detailed knowledge of the qualities of the public domain, in connection with President Theodore Roosevelt's policies of withdrawals, "led to a revival of this suspended function of the Geological Survey." By 1908 the increasing importance of this work was recognized in the organization of a land classification board. At first, the work was largely concentrated on the classification and valuation of coal lands, to which were shortly added the other fuel and mineral reservations. With the year 1906 there thus culminated a rather amazing period in American land policy when land administration had been carried on without knowledge of such elemental facts as what were the kinds and qualities of the lands.¹⁸

Even before the solid establishment of the principle of land classification in 1906, both Congress and the Presidents had experimented with the converse of the traditional American land policy of quick settlement by withdrawing from entry specified portions of the public domain for particular purposes. Naval reserves of "live oak" date from 1799; in 1872 the Yellowstone was proclaimed the first national park; in 1888 water-reservoir sites were ordered "segregated"; in 1891 forest withdrawals were authorized. During the administration of President Theodore Roosevelt the forest reserves were increased from 45,000,000 to 150,000,000 acres, some of which were later restored to entry. In June 1906 he ordered the withdrawal of all valuable coal lands pending

¹⁵ T. H. Donaldson, *The Public Domain* (1884), p. 195.

¹⁶ Quoted in George O. Smith et al., *The Classification of the Public Lands*, Geological Survey Bulletin 537 (1913), p. 11.

¹⁷ *Supplementary Land Planning Report*, pt. VII op. cit., p. 61.

¹⁸ Smith, op. cit., p. 12.

classification by the Geological Survey. Oil lands were promptly withdrawn in August of 1907 upon recommendation of the Geological Survey. Phosphate lands were withdrawn in December 1908, and during the winter water power sites were also withdrawn, upon the recommendation of the Reclamation Service. Altogether Roosevelt withdrew from entry more than 234 million acres. Metalliferous mineral lands and public water reserves were withdrawn in 1912 and potash deposits in the following year.¹⁹

Land Surveys.—The pioneer effort of a State to obtain comprehensive knowledge of its land resources and problems may properly be credited to the Michigan Conservation Department, which in 1921 modestly began field work in cooperation with other State agencies (agricultural college, State university, and State academy of science) and the Federal Government (Geological Survey, Bureau of Plant Industry, Bureau of Fisheries, and the Weather Bureau).²⁰ The purpose of the land survey was to provide the basic facts upon which to formulate a comprehensive State policy for dealing with the problem of the rapid accumulation of tax-delinquent cut-over lands. The State had actually begun to bestir itself in 1916 when Governor Ferris in his retiring message to the legislature had recommended a land economic inventory. The legislature responded at the next session by creating a soil and economic survey, but the entry of the United States into the World War led to its postponement as an economy move. With the return to "normalcy," the earlier plans were revived, especially as reenforced by the establishment of an integrated Department of Conservation. A land-ownership map was prepared in 1923; lake mapping undertaken in 1925; stream recording in 1927; wildlife tally in 1928; a timber inventory in 1930. The phrase "land-use planning" was apparently emphasized for the first time in the 1931-32 report of the Department of Conservation, as particularly applied to three counties, but further activity was stifled by the economy cuts in the appropriations.²¹

Other States became interested in what Michigan was doing; Massachusetts in Public Open Spaces in 1925, Wisconsin undertaking in 1928 an economic inventory closely patterned after the Michigan venture, and New York and Minnesota shortly followed. In 1931 Secretary Hyde of the Department of Agriculture called a National Conference on Land Utilization.²²

Wildlife.—The earliest governmental recognition of wildlife in America probably dates back to the hunting and fishing privileges granted in 1629 by the Dutch West India Co. to persons settling in the New Netherlands, which was typical of a whole series of provisions scattered through the various colonial charters. There was something mildly ridiculous in formally granting the rights to hunt and fish to persons settling in the midst of a world of plenty, with forests and all the wildlife that they contained apparently stretching westward in a never-ending procession. As in the case of forestry, the influence of mercantilism is early apparent, exemplified by the Connecticut prohibition of the exports of hides and skins in 1677.²³ In other cases it appears that the

¹⁹ 1 Stat. 622; 4 Stat. 242; 25 Stat. 527; 26 Stat. 1103; Smith, *op. cit.*, pp. 35-40. "Beginning with act of 1796 and continuing till 1867, Congress made special disposition of lands containing salt springs. At first they were to be reserved for Federal use, but with admission of Ohio, the precedent was set giving them to States in which they lay." Hibbard, *op. cit.*, pp. 266-267.

²⁰ The account has been gleaned from the Biennial Reports of the Michigan Department of Conservation for 1923-24, pp. 86-87; 1929-30, p. 75; and 1931-32, p. 59.

²¹ Mich. Acts 1917, no. 373. See P. S. Lovejoy, "Theory and Practice of Land Classification," *Journal of Land and Public Utility Economics*, I, pp. 160-175 (1925), and also *Supplementary Land Planning Report*, pt. VII, pp. 95-96.

²² In 1930 the U. S. Department of Agriculture issued a report on *Land Utilization and the Farm Problem* (by L. C. Gray and O. E. Baker), Misc. Pub. No. 97. Cf. Jesness and Nowell, *A Program for Land Use in Northern Minnesota* (1935).

²³ This example is, curiously, of a type of game prohibition which is generally considered quite modern, and in fact almost 300 years passed before any other State attempted to reintroduce the technique of export prohibition (Minn. Laws 1871, c. 33). See generally T. S. Palmer, *Chronology and Index of the More Important Events in American Game Protection, 1776-1911* (U. S. Biological Survey Bull. No. 41) upon which this section has heavily drawn. The writer also wishes to acknowledge his indebtedness to Dr. Palmer and to the officials of the Biological Survey who made available to him the card files of the Bureau.

colonists were getting frankly worried over the problem of accessibility of wildlife resources, particularly from the standpoint of food.

Deer were protected by a closed season as early as 1693 by Massachusetts; in 1708, New York extended the technique of a closed season to protect wild turkeys, heath hens, partridges, and quail; particular methods of hunting were condemned by Massachusetts in 1710; hunting was prohibited on Sundays in Tennessee in 1741.

Aside from the protection of deer, as shortly to be noted, this early legislation failed to contemplate enforcement other than through the ordinary processes of criminal law, which were highly decentralized and naturally quite crude and ineffective for their ordinary tasks. The "enactments doubtless were honored very much more in the breach than in the observance."²⁴ In 1739, however, the Massachusetts Assembly requested the towns to "chuse and appoint two meet persons" to "inform of all breaches" of the Deer Protection Act of 1693, and in particular "to take care that the violators thereof be duly prosecuted and punished." Two years after the first Massachusetts law, its sister Colony of New Hampshire provided for a similar official who was further empowered to "Inspect and search any suspected house."²⁵ According to present information, these examples remained the only cases of enforcement officials specially concerned with the administration of the game laws until the middle of the nineteenth century.

At the time of the Revolution, all but one of the Thirteen Original Colonies had enacted some kind of game legislation, but comparatively little progress was made during the next half century. Thus, it clearly appears that the period of great activity was between 1851 and 1885, and more particularly between 1851 and 1870.

The technical progress of game legislation during this period may be summarized as follows:

Closed seasons were established for snipe (1818), rabbits (1820), moose (1830), squirrels (1841), doves (1850), prairie chickens (1851), antelope and elk (1852), rail (1859), goats and sheep (1861), buffalo (1864), caribou (1870), introduced pheasants (1882), and European partridges (1898).

Specific hunting techniques were forbidden, as use of bloodhounds (1788), night hunting and use of big guns (1832), batteries (1839), camp hunting (1846), and spring shooting (1846), open water shooting (1852), snares (1854), ferrets (1860), batting doves (1869), hide hunting (1874), market hunting (1877), snow hunting (1887), jacking (1887), baited hooks (1897), explosives (1897), poison (1897), decoys (1899), ring shooting (1899), ground hunting (1904), and bull hunting (1909).

Licenses were required in 1895. By the end of the nineteenth century, all the States had provided for closed seasons for some type of game, 41 forbade export, 28 forbade sale of protected game, 20 imposed bag limits, 15 required licenses of nonresidents and 5 of residents.

This summary review of the progress of gaming legislation, in its cumulative effects, offers indeed an impressive showing of how America was slowly beginning to realize the inadequacy of the pioneer attitudes toward natural resources, and ultimately to relegate the frontier itself to the status of an historical phase in the development of the Nation. A clear example of this new emerging attitude toward natural resources, as adopted by the frontier country itself, was the enactment by the Idaho Territory in 1864 of a closed season for the buffalo, "the animal that had been called 'countless,' 'innumerable,' 'inexhaustible,' etc., in America for so long a time that its very name had almost come to connote infinity."²⁶

²⁴ Jenks Cameron, *Biological Survey* (1929), p. 8.

²⁵ Massachusetts Bay Province, *Acts and Resolves*, II (1715-42), 989-990. In 1764 the title of these local officials was changed to "deer reeves" and their jurisdiction extended to moose as well as deer. *Ibid.*, IV (1757-68), 683-684. N. H. *Laws of the Province Period*, II (1702-45), 585-586 (repealed June 20, 1792).

²⁶ Cameron, *op. cit.*, p. 10.

In most cases the legislation was adopted piecemeal by a variety of State legislatures meeting at various times in various States, paying little regard to the various configurations of their total products and effectiveness for the protection of wildlife resources. "The fish and the game laws as at present spread out in the pages of the statute books are too complex—taken together, they are too much of a hodge-podge. They have been enacted and repealed in part or in whole, and reenacted and amended and reamended till the genus and species of the law's true intent disappear in the general rubbish." Michigan State Commissioner of Fisheries, *Second Report* (1873-74), p. 41. Already at this time two States (New Jersey in 1846 and New York in 1871) had undertaken to reform their game legislation.

The early session laws throughout the entire period up to the Civil War were filled with particularistic wildlife legislation giving local communities the powers of police enforcement or authorizing them to adopt their own regulations. An examination of the New York session laws for the period 1801-50 shows a total of 127 such local laws for the preservation of fish but only 13 for game protection. Laws were enacted in each annual session of the assembly during this 50-year period, with the exception of 12 years, and in 1 year alone (1824) 18 such laws were enacted. By far the greatest portion of this fish legislation was passed during the two decades from 1811 to 1830 (102 out of 127). Game, on the other hand, was not listed till 1833, when two laws were enacted for its protection.²⁷

The colonial technique of the "deer-reeve" reappeared first in connection with the protection of fish and later of big game, on a purely local level. Thus, in 1809 the New Hampshire Legislature authorized the appointment of three "fish wardens," while in 1843 Maine provided for "fish wardens" in three counties and in 1852 authorized the Governor to appoint a "moose warden" in seven counties. Other examples of specialized local agencies for wildlife enforcement include municipal fish wardens in New Hampshire and municipal game constables in New York and Rhode Island.²⁸

Much of the protection afforded wildlife depended upon private action of the "sporting interests" and the large estate owners, particularly in "Virginia and Maryland, and to a lesser extent in the Atlantic States to the south and north."²⁹ The typical protection of wildlife by these private interests was in terms of the law of trespass, but in several cases legislative intervention was secured to equip these interests in a rather extraordinary fashion with the prerogatives and techniques of the police power of the States. By a special act of 1813 New Jersey provided for the incorporation of the upper and middle townships of Cape May County, as "*a body politic and corporate in law*" to "have and enjoy all the rights, powers, and privileges incident to a body politic and corporate," namely, to make bylaws for the protection of "fishing and fowling," within the area controlled by them as property owners, and enforce such bylaws by imposing "such penalties on the offenders against such bylaws and regulations, as they [i. e., present and future owners of fisheries and rights of fishing and fowling] shall deem expedient, not exceeding \$12 for each offence, to be recovered with costs of suit, by and in the name of said corporations, respectively, by action of debt, in any court where the same may be cognizable."³⁰

This unusual technique of endowing private associations with the authority and powers of the police state also existed in Pennsylvania, New Jersey, Delaware, and North and South Carolina but apparently has been supplanted today by State-supported enforcement agencies. Obviously, these private activities may have contributed to the cause of wildlife conservation, but the organization and method was susceptible of dangerous abuse.³¹

When the management of game was first recognized as a regular State function in 1878 by New Hampshire, it was put in a distinctly subordinate role. Fish commissions or boards had been regularly functioning for more than a decade and were reported in existence in half the States at the time that New Hampshire proposed to extend the powers of its already existing fish agency to cover game protection, without even changing the name of the agency. In 1879 in Dela-

²⁷ Computed from *General Index to the Laws of the State of New York, 1777-1850*, under headings of "Fishing and fisheries" and "Game." Only one such law was listed for the period 1777-1800, namely in 1798.

²⁸ N. H. Laws 1809, c. 30; Me. Laws 1858, c. 2127; N. Y. Laws 1871, c. 721, sec. 31; and R. I. Laws 1874, c. 391, sec. 7-8.

²⁹ Wm. T. Hornaday, *Wild Life Conservation* (1914), pp. 202-04.

³⁰ N. J. Private Acts of the 37th Assembly (1813), pp. 77-81.

³¹ Blooming Grove Park Association, Pa. Laws 1871, No. 399; Central Association, N. J. Laws 1874, c. 211; Game Protective Association, Dela. Laws 1879, c. 111; Audubon Society, S. C. Laws 1907, No. 315; N. C. Laws 1891, c. 487, 1895, c. 176, and 1899, c. 242.

were appeared the first separate game agency (game protective association). In 1887 the technique of a full-time State warden emerged simultaneously in three

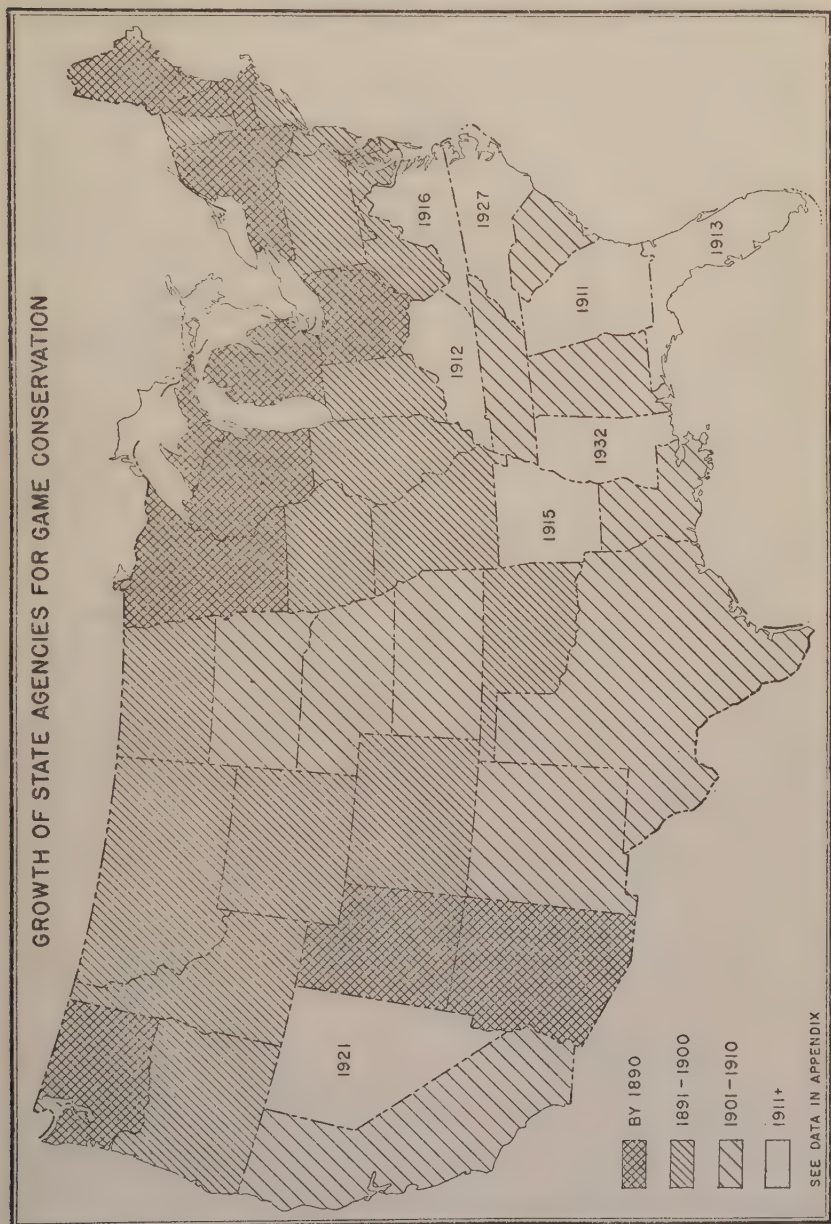


FIGURE 1

Middle Western States.³² The pattern of the subsequent development of game administration tended toward one of the following: (a) Extension of the powers

³² N. H. Laws 1878, c. 176; Dela. Laws 1879, c. 111; Mich. Laws 1887, c. 28; Minn. Laws 1887, c. 142; Wisc. Laws, c. 456.

of the already existing fish commission to include game protection (in 8 States), (b) establishment of a separate game agency (in 9 States), and (c) establishment of a joint fish and game agency (in 31 States), with a decided tendency for the third pattern eventually to subsume the other two.³³ In only one State (Pennsylvania), and despite the fact that the State was reorganized in 1923, are separate game and fish agencies maintained. In some seven other States, moreover, independent agencies are maintained for the management of commercial fisheries. The last State to establish a fish and game commission was Mississippi in 1932 after an abortive attempt in 1917. Even during this early period some States placed the management of wildlife and forests in the same administrative agency, as in the case of New York in 1895. Substantial integration of State wildlife functions with the governmental management of other natural resources, however, did not take place till the rise of "conservation," as related in chapter VI.³⁴

The activities of the State game agencies differed materially from those of the fish commissions in placing relatively less emphasis upon science, and contenting themselves with enforcing (to various degrees of completeness) the game legislation whose broad outlines were already on the statute books.

Leopold in his study of *Game Management* has suggested that the developmental pattern of State game administration tends to pass through the following sequence: (1) Hunting restrictions, (2) predatory control, (3) reservation of game lands, (4) artificial replenishment, and (5) a variety of environmental controls (as over food, cover, disease, and special factors), to which might be added (6) the encouragement, and eventual regulation, of private management. Very few States (if any) have passed through all the phases.³⁵

In remarkable contrast to forestry personnel, wildlife officials have been much more closely interallied with politics. When Leopold speaks of "game as a profession," his examples come almost exclusively from the foresters, but this is a situation that is gradually changing under the leadership of such men as Leopold, of Wisconsin, and Pirnie, of Michigan, to cite only a few.³⁶

Among the newer techniques of wildlife management that distinctly partake of a planning character are the game census, the establishment of systems of distribution of wildlife refuges, and comprehensive programs for the leasing or acquisition of fishing-and-hunting rights.³⁷

Forestry.—It is altogether too easy to assume that forest conservation is essentially a twentieth century phenomenon—a new activity of State government. But, in the words of one historian of American forestry, the problems of timber and forestry "claimed the attention of colonial legislative bodies on many occasions during the seventeenth century, and hundreds of such laws [i. e., for forest conservation] had been enacted previous to the establishment of the National Government."³⁸ This vast mass of legislation is worthy of attention not only because of its remarkable continuity but also because it affords many examples of management techniques which are today regarded as un-American, when, in fact, their counterparts are to be found at some time or other during the whole period of American development. This emphasis upon early forest legislation, however, should not overlook the importance of the eventual (at the turn

³³ The eight States extending the powers of the fish commission were Arizona, Colorado, Maine, Massachusetts, New Hampshire, New Jersey, Texas, and Wyoming, while the nine States establishing a game agency included Delaware, Illinois, Minnesota, Pennsylvania, Rhode Island, South Carolina, Tennessee, Washington, and Wisconsin. This statement is based upon an extensive examination of State session laws specially made for this study. (See appendix A.)

³⁴ *Infra*, pp. 97-100.

³⁵ A. Leopold, *Game Management* (1933), pp. 4-5, 407.

³⁶ Leopold, *op. cit.*, especially ch. 18, and M. O. Pirnie, *Michigan Waterfowl Management* (1935). See also The University and Conservation of Wisconsin Wildlife (University of Wisconsin Bulletin No. 2241, 1937). The only elective game official, paradoxically, held his office (in Alabama) continuously from its establishment in 1907 till the time of his death in 1922. U. S. Department of Agriculture Circular 242 (1922), p. 2. See also F. E. Jorgensen, *Twenty-five Years a Game Warden* (1937).

³⁷ Cf. Connecticut Board of Fisheries and Game, *Report for 1924-26*, 60 et seq. (including a map).

³⁸ J. P. Kinney, "Forest Legislation in America Prior to March 4, 1789," *Cornell Agricultural Experiment Station Bulletin* 370 (1916), p. 361.

of the twentieth century) recognition of forestry as a regular administrative function of State government.

Mercantilist theory explains the earliest legislative reference to forestry, such as the Virginia requirement of the planting of mulberry trees, the Plymouth prohibition of the sale or transport of timber out of the Colony without the approval of the Governor, and miscellaneous statutory price fixing and inspection of timber products.

More direct interest in conserving the forest resources appears in the legislation regulating or forbidding the setting of fires, primarily to protect life and buildings, but also to conserve growing timber. A quite remarkable example of the degree to which colonial administration attempted to control natural resources is a Massachusetts act of 1739, which forbade tree cutting on Cape Cod, in order to protect the area from drifting sand and prevent the destruction of the balance between land and sea which nature had established. Forest preserves were also recognized during the colonial period, one of the most famous of which was Penn's Woods. Perhaps more interesting than this example of Quakerism was the introduction of the idea of cooperative forestry by a Massachusetts Bay act of 1744 which authorized the establishment of a "common woods."

Although these examples of the colonial contribution to forestry—tree planting, cutting restriction, prevention of forest fires and trespass, cooperative forestry, and forest preserves—may seem quite remarkable in scope, yet no effective machinery of government was set up to investigate or administer or enforce forestry conservation. Exactly a century passed before America, in 1876, grudgingly recognized, with the appearance of a Division of Forestry in the Department of Agriculture, that the forest resources were entitled to some official position in the Government hierarchy, and another decade had to run before the States, in 1885, evinced similar interest.

To most laymen, even today, forestry means the planting of trees, and it was only slowly and against the greatest opposition that forestry could shift its point of attack based on the fond expectation that merely planting young trees would eventually produce new timberland, to the safeguarding of present timber. That afforestation rather than forest management or even reforestation appeared first was largely the result of the activities of the group of agricultural and horticultural societies that dotted the country during the early and middle part of the nineteenth century, persuading many States and even the Federal Government to encourage free planting by means of bounties and premiums, tax exemptions, and outright grants of land.

As early as 1794 the New York Society for the Promotion of Agricultural Arts and Manufactures inquired whether "in parts of the country where wood grows scarce" tree planting might not be advisable. Nothing much seems to have come of this except a Shade Tree Act of 1802 which authorized the private owner of land abutting on a highway to plant a row of trees placed at least 6 feet apart, and armed him with an action of trespass against anyone injuring or damaging them. The Massachusetts State Society for Promoting Agriculture, in 1804, offered premiums to persons producing from seed the best growth of specified kinds of trees. The next State concern with tree planting apparently is not to be found until the Nebraska Territorial Assembly in 1861 granted a tax exemption of \$50 per acre for any tract of land in good state of cultivation where there were not less than 100 trees and also memorialized Congress for the grant of one section in each township "for the purpose of growing timber thereon." Other States immediately responded by granting similar tax exemptions or providing systems of bounties and premiums payable directly by the State, by the agricultural and horticultural societies, or by the local governments.³⁹

³⁹ Neb., *Laws* 1860-61, p. 259; and U. S. Forest Service, *Forest Taxation in the United States* (1935), pp. 345-346.

The tree-planting movement made a common-sense appeal to the great sections of the country where there was an immediate scarcity of wood for fuel, fences, and buildings, and the movement was aided and abetted in the West by droughts and in the East by floods. In Maine alone, it has been estimated that 7 to 10 million trees were planted in 1877, but the legislation began to meet with criticism, as from Fernow, the Federal forester, and soon appeared unduly oppressive to the States themselves in terms of the amount of taxes lost. Eventually most of the statutes were repealed. The failure of the tree-planting movement as a permanent attack on the problem of forest planning and conservation has been explained in terms of the lack of scientific knowledge or facts about forests or the techniques of forestry, the neglect of existing forests, and the omission to invent any machinery of government to implement its purpose. However, it should not be forgotten that, whether incidentally or directly, the prairie landscape was revolutionarily changed from a treeless vast expanse to homestead clusters of trees.⁴⁰

Despite the "legend of inexhaustibility," which so characterized the public attitude toward the American forests, there are found a series of counter-currents posing the question, What if "inexhaustibility" had indeed proven itself a legend? For example, Dewitt Clinton in his gubernatorial message to the New York Legislature of 1822 called attention to the fact that "No system of plantation for the production of trees, and no system of economy for their preservation has been adopted," and cynically added, "Probably none will be until severe privations are experienced." Expressing real concern, especially when the region from which it emanated is considered, the Georgia Legislature in 1858 petitioned for the appointment of a Federal commission "to inquire into the limits, extent, and probable duration of the Southern Pine Belt." In 1866 the recently created Federal Department of Agriculture, in calling attention to the lack of adequate scientific knowledge about the forests of America, urged prompt adoption of a plan for systematic experimentation and research in forestry management. It is significant that the report proposed that this task be undertaken by a private research agency, supported by public funds, rather than as a direct undertaking of the Federal Government, because research demanded a continuity of tenure exceeding the 4-year cycle of presidential and other official terms of office.⁴¹

In 1867 Wisconsin struck a new note by forsaking mere protest and petition and proposed a thorough going investigation of the forests of the State, the rate at which they were being destroyed, effect upon climate, State control of private management, and wood substitutes. The immediate result was not particularly significant—tax exemptions and bounties for planting tree belts; but Wisconsin had made a point of departure by officially calling for broad investigations and focusing legislative attention on forests as a regular problem for Government. Other such investigations were ordered for Maine, New York, Connecticut, Vermont, and New Hampshire. Nothing resulted in the cases of Vermont and New Hampshire, while both Maine and Connecticut passed tax-exemption laws.⁴² The most significant action was that of New York, whose commission reported in 1873, recommending the discontinuance of sales of State lands and the retention of all lands reverting to State ownership through tax delinquency. Nothing actually resulted for a decade in the way of legislation, but the State holdings increased from 40 thousand to 500 thousand acres through tax sales, and in 1885 the first permanent State agency in the field of forestry came into being, as shortly to be related.

⁴⁰ A significant factor contributing to this was undoubtedly the device of an annual Arbor Day. Nebraska in 1872 led the way by designating a certain day upon which the State inhabitants were urged to plant trees. The idea found immediate and ready acceptance and within 20 years Arbor Day had been recognized officially in a score of other States.

⁴¹ Cited in *A National Plan for American Forestry* (1933), pp. 747-748.

⁴² *Ibid.*, pp. 742-743.

At the 1873 meeting in Portland (Maine) of the American Association for the Advancement of Science, Dr. Franklin B. Hough had presented a paper on the Duty of Governments in the Preservation of Forests, strongly stressing the fact that the problems of forestry were "not limited to a particular State, but interest the Nation generally." To the modern mind, this language seemed to favor Federal activity, but Dr. Hough would only "venture to suggest that this association might properly take measures for bringing to the notice of our several State governments, and Congress with respect to the Territories, the subject of protection to forests, and their cultivation, regulation, and encouragement." When the special committee on forestry reported the following year, it recommended the creation of a forestry agency with powers analogous to those of the existent United States Fish Commission. Again it is interesting to note how narrowly the functions of government were conceived:

We should not expect that our general or State governments will ever directly undertake the planting and preservation of forests. They may by judicious reservation protect the timber on lands still owned by them, and they may by carefully devised laws, invite and protect the owners of the soil in undertaking this industry at their own expense, and by punishing trespass and enforcing precautions against running fires, may thus directly promote the growth of timbers. But mainly is this result to be sought through an intelligent, systematic, and well-considered series of statistical and scientific inquiries, tending to ascertain and make widely known whatever is most valuable for practical application, and with means to call into service the highest talent of the country in special points of investigation, as occasion may from time to time require.

In short, all that was contemplated was the setting up of a central clearing house of information with an exceedingly small staff to conduct statistical and other inquiries. This proposal involved little or no departure from past policy, nor committed the Federal Government in any way.

After the Federal Forestry Agency had been in existence almost a decade and had undertaken (in 1880) an inventory of the forest resources of the Nation, the States still lagged behind. Then in the year of 1885 four States became active, situated as diversely as New York with its Adirondacks, Ohio at the beginnings of the prairies, Colorado with its mountains and plains, and California on the Pacific coast. Out of the four, however, only one forestry agency survived, the others dying off within a few years. The States that failed were Colorado, California, and Ohio. The failure of the Colorado Forest Commissioner has been explained in terms of the huge Federal areas removed from his authority and the opposition of the lumbering interests, across which California also ran afoul when "it sought to get the goods on timber thieves and fraudulent entrymen." The Ohio experiment was limited to research, and died a quiet death when the original leaders dropped off and interest waned. New York alone survived because it had a big job to do in the Adirondacks.⁴³

Until the end of the nineteenth century State forestry had largely confined its activities to fact gathering and educational work, with the notable exceptions of the States of New York and Pennsylvania, where actual management of public forests was conducted with remarkable stability and continuity of policy. During the next decade (from 1900 to 1910), however, State forestry made very rapid strides, with 16 States establishing forestry agencies for the first time. The impetus came from a series of devastating fires in the Great Lakes States and the Northwest and also from the growing example of the Federal Government, to which many of the States were turning for advice on what and how to practice forestry as a regular function of Government. The States were told, in the words of the *National Plan* of the United States Forest Service:

(1) That their laws should provide for a technically trained State forester in charge of the work, and (2) that his position and entire organization must be nonpolitical. To assure an administration

⁴³ *Ibid.*, pp. 750-756.

When Federal financial aid was made available to State forestry under the Weeks Act of 1911, new forestry agencies sprang into being in a dozen States, and the functions of other State forestry agencies were greatly expanded and strengthened by singling out fire protection as "something specific to do and at the same time to do everywhere," becoming in fact the "backbone of State forestry." At the time of the Weeks Act 25 States were reported to have some kind of forestry agency; by 1937 the number had increased to 42. Students of forest administration are quite doubtful whether the remaining States can be expected to follow in line because their forests are located almost entirely on Federal lands and already under the management of the United States Forest Service.

Professor Illick has outlined some trends in State forest administration as follows: (1) Centralization of powers, influences, and responsibilities as "sustained in a large measure by grants in aid"; (2) structural trend toward integration with conservation rather than agriculture in "accord with the general principles of integration in public administration"; (3) active internal reorganization of State forestry in the interests of simplification and coordination of activities; (4) steady growth of technical personnel and extension of the merit system; (5) forest-land acquisition "retarded considerably, unless the Federal Government is willing to assist the States" (under the Fulmer Act of 1935); (6) public relations; and (7) special consideration to the human values in forestry.⁴⁵

In notable contrast to managers of other natural resources, the foresters have long and conspicuously expounded the content and methods of long-range planning, in both the Federal and State Governments.⁴⁶ The explanation may be partly personal in origin (due particularly to the activities of Gifford Pinchot and his associates), but other factors are also involved, as the sustained practice of the essentials of a "career service," and the close articulation of forestry government with forestry education (particularly at Yale, the head of which was formerly a Federal forester), the availability of regular Federal aid for a considerable period of time (since the Weeks Act of 1911), and the deliberate practice of interchanging research and administrative personnel in the Federal service and also among the States.⁴⁷

Parks.—In 1641 the Massachusetts Bay Colony decreed that the "Great Ponds," bodies of fresh water over 10 acres in area, should forever remain open to the public for "fishing and fowling" and thereby assure a permanent food supply. The policy so declared by colonial New England has successfully survived into the present day, although now the necessity may no longer be food but open spaces.⁴⁸ This example is only one of a long series of New England

⁴⁵ See Joseph S. Illick, "Some Trends in State Forest Administration," *Journal of Forestry* (1935), 33: 310 et seq., and "Administrative Setups for State Forestry" (made available in manuscript). "Of the 40 States that now [1933] carry on forestry functions, 30 do not now have and never have had their forestry under agriculture." At that time 4 States still had forestry connected with agriculture; by 1937 only 1 State (Rhode Island) so reported in the author's questionnaire to the State planning boards.

⁴⁶ Cf. *A National Plan for American Forestry* (1933).

⁴⁷ "It appears that a higher degree of interstate movement of supervisory officials has developed among the State forest services than elsewhere. This has doubtless been brought about in part by the national consciousness of the forestry profession and by the fact that State forest services are generally relatively inconspicuous governmental activities, in which the appointment of a nonresident may be made without attracting much adverse criticism. A few examples will illustrate the extent to which the practice has arisen in forestry. The Connecticut State forester was once chief of the Vermont service and at one time served in the Federal service. The Texas State forester was formerly deputy State forester of Oregon and earlier had served in the U. S. Forest Service. The assistant State forester of Georgia has served in the States of Montana and Florida. Mississippi and Oklahoma have chief foresters who have served in other States. The State forester of Tennessee was formerly assistant State forester in Virginia and was at one time in the New Jersey service. In Massachusetts the officials in charge of fire-prevention activities formerly spent 9 years in the New York department; the assistant State forester was a ranger in the Federal service for 6 years. The State forester of Arkansas has been an extension forester in New York and in North Dakota. The State forester and the assistant State forester of Montana came from the Federal Forest Service. The first chief of the Minnesota service, who served many years after its establishment in 1911, was brought from the Federal service. The State forester of Illinois was formerly a regional forest supervisor in the National Park Service. The former State forester of Oklahoma and assistant State forester of Indiana are now employed by the Forest Service. A former head of the Pennsylvania service was at one time chief of the Federal Forest Service. At one time or another Louisiana, New Hampshire, Florida, Alabama, and Georgia have had State foresters who have had experience in the Federal service. These cases do not exhaust the list of such instances but illustrate the striking erosion of the restrictions of State boundaries on lines of career." V. O. Key, *The Administration of Federal Grants to the States* (1937), pp. 311-312.

⁴⁸ In 1923 the attorney general of the Commonwealth ruled, "The great ponds can be applied to such uses as the progress of civilization and the increasing wants of the community properly demanded." Cited in B. W. Nelson, *State Recreation* (1928), p. 3.

provisions setting aside "commons" in the compact town communities that were so characteristic wherever people from New England settled. The word "park" can be traced back to the large English landed estates and reservations that were so vigorously protected by the hated game laws which had found root in colonial America, especially in the South. Such parks and reservations differed significantly from the 1641 example of Massachusetts Bay in that they were not open to the public and were usually well cared for and administered, in unfortunate contrast to the "Great Ponds," public access to which was guaranteed but for which no mechanism of administration had been provided.

Aside from private estates and the urban park movement,⁴⁹ the first great step in the evolution of the concept of National and State parks took place at the very culmination of the Civil War when Congress in 1865 gave the beautiful Yosemite Valley, with its overhanging cliffs and towering waterfalls, to the State of California for recreational purposes. Actual administration of the area, however, was delayed for a decade pending disposal of claims of settlers in the area, and then it was opened under a special commission appointed by the Governor of California. In 1905, however, Yosemite was returned to the Federal Government in consideration of other areas suitable for State park purposes.

The first substantial effort by the States to establish their own park systems really began, shortly after the grant of Yosemite to California, with the efforts to preserve the natural beauty of Niagara Falls. In 1885—an important date in New York's conservation history for it also witnessed the great Forest Preserve Act—the Niagara State Reservation was dedicated. In the same year the Federal Government again lent its good offices to the development of State parks by transferring Mackinac Island to the State of Michigan, after it had been successively a military reservation and a national military park. Minnesota next entered the park field in 1889 by establishing Birch Coulee Park and shortly after its well-known Itasca State Park. Civic groups rapidly sprang into being for the purpose of effectively vocalizing the public needs for parks—the Massachusetts Trustees of Public Reservation in 1891, the American Scenic and Historic Preservation Society in 1895, and on State or regional bases the Appalachian Mountain Club, Society for the Protection of New Hampshire Forests, and Ohio's Historical and Archeological Society, and Save-the-Redwood League, to cite only a few.

The growth of State recreation is indicated on the accompanying map, from which it appears that only two States (Massachusetts and New York) established before the present century some central administrative agency to manage the principal State recreational areas. Ten other States are reported to have established park agencies before the creation of the National Park Service in 1916, but the rapid growth of State park administration occurred immediately thereafter. Between 1917 and 1930, 29 States appear to have established a park agency, and the National Park Service reported in 1937 that there are park agencies in all the States except Arizona and Wyoming, within which there are extensive areas held as national parks and forests.

In many States, however, State parks appeared before the establishment of a State park administrative agency. Thus, five States (Massachusetts, Michigan, Minnesota, Pennsylvania, and Wisconsin) had created State parks in the period before 1900, although no primary park administrative body was in existence. The tendency has been distinctly away from using individual park boards or commissions for the administration of particular recreational areas to the establishment of a central park agency with full jurisdiction over all the principal recreational areas of the States and, in turn, to integrate the park activities with the general conservation agency.⁵⁰

⁴⁹ It should also be pointed out that this whole section on recreation is rather incomplete pending the report of the Secretary of the Interior and the National Park Service on the Nationwide recreational survey authorized by Congress in 1936 (49 Stat. 1894). See National Park Service, 1937 *Yearbook, Park and Recreation Progress* (1938).

⁵⁰ *Infra.*, pp. 97-103.

One of the characteristic functions of the State park agencies is to make and keep current comprehensive surveys of potential park areas and facilities. One

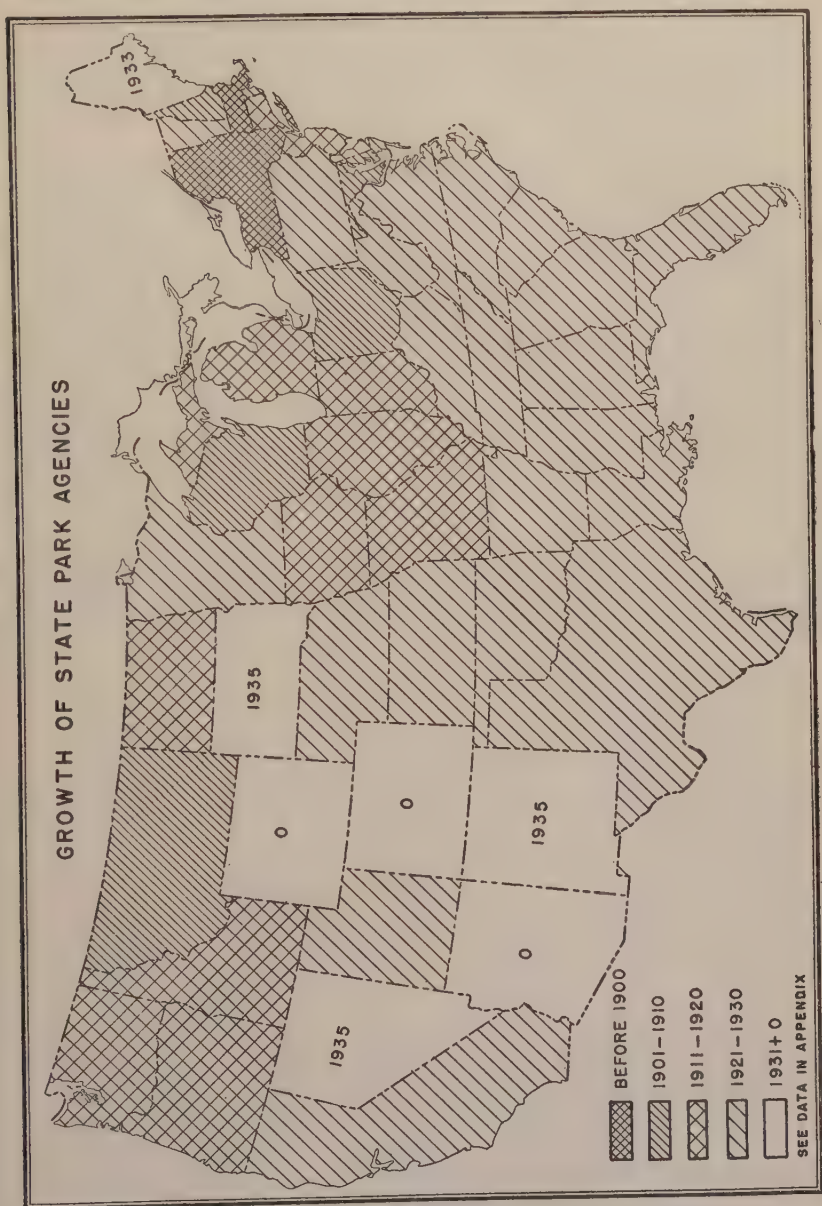


FIGURE 3

Prepared in office of the National Resources Committee

of the first comprehensive surveys⁵¹ of this character was that undertaken by John Nolen in 1908 when he was retained as consultant to the Wisconsin State Park Commission to investigate the recreational possibilities of that State.

⁵¹ Cf. early reports of Massachusetts Trustees, etc.

Writing in the *American Planning and Civic Annual*, Miss James has characterized Mr. Nolen's survey as follows:

His study of the State, by no means as exhaustive as that made 20 years later in California by Frederick Law Olmsted, resembled Mr. Olmsted's in its designation of specific areas and in the formulation of certain selection standards from which any justifiable selection must proceed; and they are excellent standards, in general quite as applicable to day as they were then. A notable feature of his report is his reasoned justification for State parks. Three of the four areas he recommended were acquired by the State, in whole or in part, within 4 years.

The best known State park survey was that prepared by Frederick Olmsted for the State of California in 1927-28, based on detailed field investigations, reports of regional advisers, and public hearings held in many areas so as to afford an adequate opportunity for the expression of citizen opinion. Out of a total of 330 areas which the staff studied, the report recommended 125 projects for favorable consideration. The report of the survey concluded with a very brief and very general discussion of the nature of principles governing the acquisition of park areas. More interest probably attaches to the procedure of the survey, involving cooperation between volunteer reporting groups and a central technical staff, and to the specific criteria use in eliminating particular areas from the recommendations of the report.⁵² Other comprehensive efforts at State park planning include the Massachusetts Open Space Plan of 1926, the 25-Year Conservation Plan of Iowa prepared by Jacob Crane in 1933, studies of the New York Council on Parks, and the Indiana Conservation Department.

⁵² See *Report of State Park Survey of California* (1929), pp. 7-13 (dealing with "scope and limitations of the survey, method of conducting it"), 54-57 ("discussion of specific State park projects"), and 70-71 ("principles governing acquisition of park areas"). Miss James has commented, "The report itself is extraordinarily fine in a variety of ways. For one thing, it related State parks to the recreational activities, facilities, and needs of the people of the State as a whole in an exceptionally illuminating manner; and it established selection criteria that, in my own opinion, come pretty near being the best yet formulated." *American Planning and Civic Annual*, p. 136.

Part II. SPECIAL TRENDS

Chapter 3. MINERALS

SUMMARY

State management of minerals has involved two usually separated activities: survey and control. These activities are separated not merely in present administrative organization but also by the fact that the survey activities appeared as early as the decade of 1820-30, while mineral control activities came only toward the end of the nineteenth century. The primary function of the early State geological surveys was to explore the nature and location of the mineral wealth of the country, and they were frequently followed by periods of exploitation and speculation that were to some extent made possible by the knowledge revealed by the surveys. In only one State did these early geological surveys become a permanent agency of the State government (New York, 1836), but in all the other States the survey organizations were intermittent in character. By the end of the century, however, permanent survey organizations were established in most States. In the course of their operations these surveys have compiled a wealth of information about the physical resources of the States.

Initially, the American policy with reference to mineral deposits on the public lands was one of reservation and governmental leasing, but this policy was abandoned on a national scale in 1845 as "uneconomic," and no national efforts were made to prevent mineral exploitation until the first decade of the present century. In conspicuous contrast to this reversal of a policy of controlling mineral development on the vast majority of public lands, a few States (Texas, Michigan, and Minnesota) expressly adopted the "discredited" policy of mineral reservation. One of the concrete achievements of the later conservation movement was the readoption of the reservation policy during the first two decades of the present century by the National Government as well as by many States.

Governmental control of mineral development on privately owned land has been very slow in emerging. State regulation of coal mining was first drawn in terms of the health and safety of the miners rather than the conservation and effective utilization of coal as a mineral fuel, and even today the most elementary regulations for the conservation of coal are lacking in most States. Greater State control is exercised over oil and gas, starting with crude measures for the prevention of physical waste in the decade 1890-1900 and gradually expanding into "economic waste" and production control in the principal oil States. The most effective examples of conservational planning of oil (unitization) are still confined to oil fields on the public lands.

The mineral wealth of the United States, both in tradition and in fact, has always been one of the most important factors in its economy. During the colonization period venturesome Europeans were attracted by the search for gold, while today our coal and iron deposits are taken as permanent assurance of America's dominating role in world affairs. In paradoxical contrast to this emphasis on America's mineral wealth, there has been little tendency to think of minerals in relation to the conservation activities of Government. "Mining is the step-child of our economy."¹

This chapter is divided into sections dealing with (a) policies relating to minerals on publicly owned land; (b) the surveys, primarily geological, and (c) the mineral fuels (coal, oil and gas).

Mineral Policies on the Public Lands.—The royal charters of the Colonial period commonly stipulated that a minimum proportion of all gold and silver be reserved for the Crown. The early Virginia charter of 1606 reserved one-fifth of all gold and silver, and also one-fifteenth of copper, a provision not usually found in the other charters. Lord Baltimore and William Penn both reserved large areas for the purpose of retaining control of land thought to contain mineral deposits. The New England charters, on the other hand, generally granted to the common settlers the rights of mining along with the rights of fishing, as in the case of the Massachusetts Bay charter of 1629. New York substantially repealed the doctrine of sovereign reservation of mineral deposits by greatly expanding the privileges and rights of the discoverers of such deposits. All these cases of sovereign prerogatives referred exclusively to the precious or semiprecious minerals, and even in England the doctrine did not include the most important mineral resources of the present day, i. e., iron and coal.²

The principle of sovereign rights to minerals smacked not only of royal absolutism, but it was also clearly inconsistent with one of the fundamental maxims of Anglo-American land law, which forms the oldest, most intricate and (supposedly) immutable branch of the common law. The owner of land, ran the established maxim, owned everything on, in, below, and over the land—upward to the skies and downward to the core of the earth.³ One of the consequences of this rule for the planned conservation and utilization of mineral resources was for "our coal and oil deposits to pass into the ownership of a half million farmers and laid the foundations of a present-day problem of production control."⁴ This maxim, however, was by no means a true statement at the time when American public lands were first opened to settlement, as the following section will show.

When Congress was considering the problem of managing the new Western Territory, the idea of express reservation of mineral deposits was immediately presented, in accord with the Colonial precedents that have been reviewed in the preceding chapter. A discordant note, however, had been introduced in 1779 when Virginia abolished the doctrine of royal mines along with quitrents, primogeniture and entail and other land laws associated with English aristocracy and royal absolutism. On the other hand, in 1776 Silas Deane had proposed that within the new States public control be retained of one-fifth of all lands, whether containing minerals or not. Perhaps the most interesting suggestion came from Peletiah Webster in 1781 when he proposed that "all salt licks and

¹ National Resources Board, Report (December 1934), p. 391.

² See B. P. Poore, *Charters and Constitutions*, I, pp. 257, 776, 812, 926, 943-944; II, pp. 1380, 1391, 1510, 1890, 1898 (1878); H. L. Osgood, *American Colonies (1904-7)*, II, p. 25; Ford, *Colonial Precedents of Our National Land System*, p. 143; Thorpe *The Federal and State Constitutions, Colonial Charters, and Other Organic Laws*, p. 1834.

³ *Cuius est solum, ejus est usque ad coelum*. 2 Blackstone's Commentaries 18. Like many legal maxims this was never wholly true and is increasingly false today. Cf. Francis H. Bohlen, "Fifty Years of Torts," 50 *Harvard Law Review* 725 (1937), at pp. 728-729.

⁴ Tryon, *Mineral Economics*, p. 9. It is somewhat of a paradox that one of the most distinctive rules of American mining law—extralateral rights—has actually operated to deny this maxim and is in fact based on a theory of ownership that extends outward rather than inward, as the spherical shape of the earth would demand the common-law lines to go in their downward path. Under the doctrine of extralateral rights a miner may pursue the "dips and angles" of a mineral vein from the surface and within the end lines of his property to wherever it may lead, even though extending under the surface of other mineral claims. Rickard, *op. cit.* pp. 622-623.

mines, and all valuable fossils in which the country greatly abounds, may be reserved and sequestered for public use" so that "the vast profits * * * inure to the advantages of the whole community." A clause to this general effect appeared in the land ordinance of 1785, which reserved "one-third part of all gold, silver, lead, and copper mines" in the public lands of the Northwest Territory. In 1796 all salt springs and licks on the Federal domain were ordered reserved.⁵

From these provisions it was clearly the intention to provide for the disposition or use of mineral resources according to some policy different from the general scheme of land disposal. This policy gradually appeared to be one of leasing, for in 1800 Congress authorized the surveyor general to lease reserved saline lands and in 1807 extended it to include bed mines on the public domain of the Indiana Territory. In 1816 the policy of leasing mineral lands on Government lands was made general by the indirect method of forbidding mining on the public lands "without the approbation of the President of the United States."⁶

In 1839, however, the President was requested by the House of Representatives to prepare a "plan for disposal of the public mineral lands." Under this resolution an exploration was made of reputed mineral lands in Iowa and Wisconsin, but apparently little was done until in 1845, when President Polk in his first annual message stated, "The present system of managing the mineral lands of the United States is believed to be radically defective." He pointed out that, although more than 1 million acres of public lands had been reserved from sale and numerous leases had been made, only some \$6,000 were collected for the years 1841-44, while the administrative expenses were in excess of \$25,000, timber was destroyed, and the mines were carelessly and wastefully worked. Frequent litigation between the Federal Government and individual citizens had occasioned much irritation in the mining regions and required additional expenditures by the Government. President Polk recommended the abolition of the lease system and urged placing mineral lands on the market for sale "upon such terms as Congress in her wisdom may prescribe," reserving to the Government an equitable percentage of the gross amount of the mineral products. Congress promptly opened for public sale, at a minimum price of \$2.50 per acre, the reserved lead mines in Illinois, Arkansas, Wisconsin, and Iowa. In 1847 this method of sale was extended to cover lands "containing copper, lead, and other valuable ore" in Michigan and Wisconsin.⁷

The discovery of gold in California presented on a grand scale the problem of how to revise the existing legislation with reference to mineral deposits on the public lands. Thomas Ewing, first Secretary of the Interior, stated to Congress in December 1849, "It will rest with Congress to determine whether * * * this [sovereign] right shall be asserted or relinquished. If relinquished, it will require an express law to effect the object, and if retained, legislation will be necessary to provide a mode by which it shall be exercised."⁸

In 1866 the first General Mining Act was passed, opening the public domain to lode mining by all actual or declarant citizens, provided they "had previously occupied same according to local mining rules and had expended as much as \$1,000 in labor and improvements." This was a frank espousal of the rule which identified possessory occupation with mine ownership, in accordance with the local mining customs that had sprung up. In 1870 the same rule was made applicable to placer mining. Oil lands were brought under the placer statute, which along with the rule of capture led to quite disastrous consequences

⁵ Va. Henning's Stat., 1779, X, 64; Ford, *op. cit.*, p. 144; Donaldson, *The Public Domain*, p. 306. The principal disposition of the salt springs was by grants to the States in their enabling acts, starting with Ohio in 1802, and including Indiana (1816), Illinois (1818), Alabama (1819), Missouri (1820), Michigan and Arkansas (1836), Iowa (1845), Wisconsin (1846), Kansas and Minnesota (1857), Nebraska (1864), and Colorado (1875).

⁶ 3 Stat. 260. But in 1829 Congress authorized the sale of reserved lead mines in the State of Missouri—a departure from the established policy of reservation and lease. Donaldson, *op. cit.*, pp. 306-307, 806.

⁷ Adapted from Donaldson, *op. cit.*, pp. 306-308.

⁸ *Ibid.*, pp. 309-310.

for the cause of conservation. Coal lands were thrown open to entry under a law of 1864 setting a minimum price of \$25 per acre (later reduced.)

Meanwhile the lack of definite knowledge about the mineral resources of the public domain had facilitated the transfer of huge tracts of highly valuable mineral lands into private ownership simply as agricultural lands, particularly the coal deposits along the western slopes of the Appalachians and large parts of the iron deposits of Alabama, Michigan, Minnesota, and Wisconsin.

At the very time when the national mineral policy was changed from one of public reservation of mineral rights on the public lands to that of free acquisition,⁹ some of the States were beginning to take positive steps in the former direction.

In 1840 the Republic of Texas expressly provided that all the Mexican laws relating to "the reservation of * * * mines and minerals of every description" were to be retained by the new Republic despite the fact that the English common law was otherwise declared to prevail. The Mexican laws were derived from the civil law, which recognized the doctrine of "mines royal," of a special sovereign right to mineral deposits wherever located. This policy remained the law of Texas until shortly after the Civil War when the Reconstruction Ordinances of 1866 declared that "Texas hereby releases to the owner of the soil all mines and mineral substances." In 1883 Texas tried to approximate its older law by providing for the reservation of mineral rights on all lands then owned by the State, but the scope of this statute was considerably more limited than the earlier Mexican law which applied to minerals whether found in public or private lands.¹⁰

The State of Michigan had also declared (in 1846) that—

All lands known to contain Mines or Minerals, which now are, or may hereafter become the property of this State, shall be reserved from sale by the authorities thereof, until directed to be sold by, and under such regulations as the legislature may hereafter prescribe.

The same act imposed a specific tax on ores at the rate of 4 percent of the product of mines. Later at the same session Michigan also provided for a system of leasing of State-owned mineral lands to be administered by the State land commissioner at a minimum royalty of 4 percent.¹¹ In 1889 Minnesota reserved for the State all mineral rights on publicly owned lands in three counties, and in 1901 the law was extended to cover the entire State.¹² Largely as a result of the conservation movement of the first decade of the present century, the number of States expressly reserving mineral rights on their publicly owned lands sharply increased. By 1910, 3 States had passed such laws, while the decade 1911-20 added 9 more States,¹³ and by 1932 the Wisconsin Legislative Reference Library concluded that at least 17 States had adopted legislation reserving to the State all mineral rights on publicly owned lands, while 33 States had provided for some system of leasing of mineral lands.¹⁴

⁹ In 1906 the national policy was reversed when President Theodore Roosevelt directed the Secretary of the Interior to withdraw from entry all potential coal lands, pending classification by the Geological Survey. In 1914 Congress passed a leasing act applicable to coal lands in Alaska (38 Stat. 741); in 1920 this policy was made applicable to all the public lands (41 Stat. 438), and at the present time the leasing policy also applies to phosphate, oil, gas, and potassium deposits (41 Stat. 437; 44 Stat. 10, 7). In 1866 the land office commissioner ordered withheld from disposition all tracts alleged to contain petroleum, but "how long this suspension was in force is not evident from available data." John Ise, *United States Oil Policy* (1926) p. 295.

The courts have become considerably stricter in construing the mining laws and have subjected alleged compliance therewith to much closer scrutiny. See B. G. Davis, "Fifty Years of Mining Law," 50 *Harvard Law Review* 897 (1937), especially pp. 900-904.

¹⁰ *Tex. Laws* 1840, p. 4; *Paschal's Digest of Laws in Force* 1869, p. 952; *Tex. Laws* 1883, c. 97.

¹¹ *Mich. Laws*, Nos. 78, 208.

¹² *Minn. Laws* 1889, c. 22 and 1901, c. 104. "The State of Minnesota does hereby reserve for its own use and benefit all the iron, coal, copper, gold, or other valuable mineral, which may be contained, found or discovered in or upon the lands of the State." South Carolina appears to have asserted the right to college royalties for phosphate deposits found in the streams of the State. *S. C. Laws* 1890, No. 447.

¹³ *Mont. Laws* 1909, c. 147; *Okl. Laws* 1907-8, p. 490; *Vt. Laws* 1910, No. 149; *Ariz. Laws* 1915, c. 5 (sec. 46); *Fla. Laws* 1911, c. 6159; *La. Laws* 1914, No. 38; *Nebr.* 1920 constitutional amendment; *N. M. Laws* 1912, c. 82; *Ohio Laws* 1915, p. 245; *S. D. Laws* 1919, c. 308; *Utah Laws* 1919, c. 107; and *Wash. Laws* 1917, c. 149.

¹⁴ A. Veal, *Digest of State Laws on Conservation of Minerals* (typewritten). This compilation omits Texas. In 1928 New Mexico adopted a constitutional amendment (XXIV) requiring reservation of mineral royalties in all leases of State lands.

The Surveys, Primarily Geological.—In the early 1820's at least three States had begun preparations for making "surveys" of State resources, primarily geological in character. By the end of 1840, 16 States were added to the initial trio. By the time the Civil War interfered with the work, altogether 28 States had, at some time or other, undertaken in a more or less adequate fashion to survey the geology of the State and, occasionally, to extend the inquiry to such related items as agricultural, zoological, and botanical data.¹⁵

The first such State survey was that of North Carolina, whose legislature in 1823 authorized the State board of agriculture to pay the expenses of "geological excursions" undertaken by Prof. Denison Olmsted of the State University. A very close second was the neighbor State of South Carolina which, in the same year, authorized a geological and mineralogical survey. The work was undertaken by Lardner Vanuxem, who later performed similar work for the State of New York. The report of the survey was published in the newspapers of the State in 1826 and later in Mill's *Statistics of South Carolina*, entitling South Carolina to claim primacy for issuing the first geological report by any State in America.

Perhaps the most comprehensive of the early State surveys, and one involving large expenditures of State funds, was a series of investigations undertaken by the State of Massachusetts during the years 1829-41. In presenting the following description of the Massachusetts survey, which has been adapted from Hasse's *Index of Economic Materials in State Documents*, it should be understood that there appears to have been no administrative relation whatever between the several branches of the survey, nor was there a central directing office.

The survey originated out of the need for a State map, which it was proposed to prepare in the office of the secretary of the Commonwealth on the basis of returns of local maps from individual towns and cities. The legislature required the following detail in the preparation of the map:

* * * on each of said plans, the place where any other town or district line meets or joins the line of any other town or district, respectively; the names, courses, and magnitude of rivers and smaller streams; roads, public and private, with their courses; the situation of houses for public worship, courthouses, and other public buildings; the known and admeasured distance from the center of the town or district from the shire town of the county, and from the metropolis of the Commonwealth, in the several roads actually travelled; the length and the course of the magnet needle (noting its variations from the true north) of the boundary lines of the town or district; bridges; ferries; falls; ponds; shores; harbors; islands; mountains; hills; mills and manufactories; mines and minerals, and of what kind; iron works and furnaces; meadows (salt and fresh); and wood land; the scale on which such plans shall be taken, and time when the actual survey was, or shall have been made, shall be inserted, specified, delineated or described. And any land belonging to the Commonwealth, within the limits of any town or district, or adjoining thereto, in any place unincorporated, shall be particularly named, and the known quantity of such land specified.¹⁶

At the same time astronomical and trigometrical surveys were authorized. Shortly after, the legislature added the geological features of the State as a proper item for inquiry. The report of the geological survey by Edward Hitchcock came out in four parts, "economic geology," "topographic geology," "scientific geology," and "catalog of animals and plants," concluding "with a descriptive list of specimens of rocks and minerals collected for the Government." The report received comparatively wide distribution (1,200 copies). In 1837 the general court authorized the appointment of some suitable persons to "make a further and thorough geological, mineralogical, botanical, and zoological survey, particularly with reference to the discovery of coal, marl, and ores, and an analysis of the various soils of the State relative to agricultural benefit."¹⁷ Reports of

¹⁵ The data of this section have been largely compiled from "The State Geological Surveys of the United States" (1911), U. S. Geological Survey Bulletin 465, supplemented and corrected by "Summary Information on the State Geological Surveys and the U. S. Geological Survey" (1932), National Research Council's Bulletin No. 88.

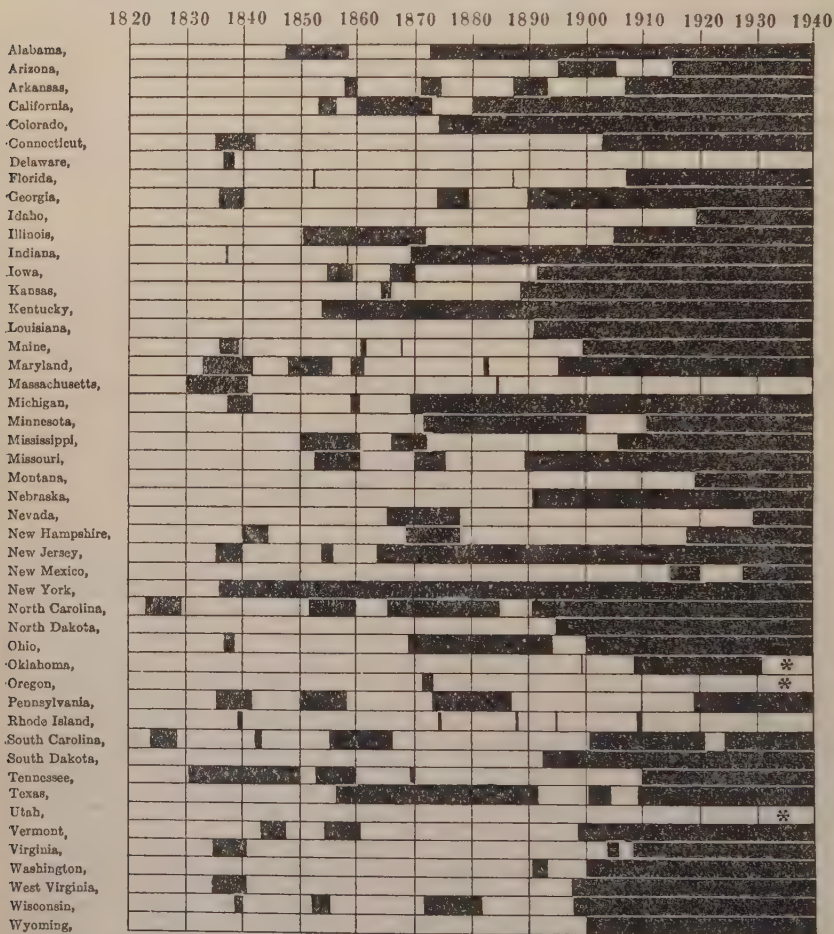
¹⁶ Mass. Laws 1830, c. 50.

¹⁷ The survey was abolished in 1841 (c. 14).

the zoological and botanical surveys included items (in chronological order) on fishes, reptiles, birds, herbaceous plants, quadrupeds, insects, invertebrata, trees, and shrubs.

This same broad outlook of the Massachusetts survey was reflected in some of the surveys of the other States which eagerly joined the procession of the State

DEVELOPMENT OF THE STATE GEOLOGICAL SURVEYS



** GEOLOGICAL ORGANIZATIONS HAVE BEEN ESTABLISHED IN 1933 OR LATER. SEE APPENDIX.

SOURCE: U. S. GEOLOGICAL SURVEY BULLETIN 465 (1911) AND NATIONAL RESEARCH COUNCIL BULLETIN NO. 88 (1932)

FIGURE 4

surveys, particularly during the thirties when 16 States authorized surveys. Although the surveys were generally designated as geological or mineralogical, they actually undertook work on such related items as agricultural, zoological, and botanical phenomena.

During the following decade the interest in geological surveys seems definitely to have lagged, with only two States being added to the list and one of these coming at the very end of the decade. However, starting with the fifties the interest was revived, and 7 States were added, thus making a total of 28 States that had authorized geological surveys prior to the Civil War. The second spurt of interest was due in no small part to the American Association for the Advancement of Sciences which in 1849 had memorialized the legislatures of the States having no geological surveys to undertake the task or complete work that had been suspended. The coming of the war naturally disrupted the work in most States (except California and Illinois). In only one State was the geological survey permanently launched as a regular function of the State government, namely, New York, in 1836. (See fig. 4.)

With the cessation of hostilities and resumption of normal civil government, several of the States reestablished their geological surveys. Most of them were scheduled only for a short time, but some of these performed excellent work, as in the case of Illinois, whose work has been characterized by the United States Geological Survey as follows:

Its notable accomplishments were recognized by scientists of the whole world. The pioneer work which it performed in American paleontology is of the highest order and constitutes one of the standards on which paleontologists of the present day work.

While the contributions might be thus of high value in particular instances and for limited purposes, the State geological surveys were seriously hampered by that lack of continuity in work which is so basic to all scientific research and to planning efforts in particular. In the case of Illinois—so highly commended above—the survey lapsed in 1872, and no further geological investigation was undertaken for more than 30 years.¹⁸ Unfortunate as the case clearly was, it was only too typical of many States which had made a splendid start forward toward securing basic understanding of the geological structures and premises of their State and of their mineral resources in particular.

However, a number of States were seeking to correct this situation by making the professor of geology at the State universities responsible for conducting such of the geological investigations of the State as the legislature should meagerly provide for. Apparently the first permanent working arrangement of this type dates from 1854 in Kentucky.¹⁹ Prior to the establishment of the United States Geological Survey in 1879, no other State had followed Kentucky's example, but, more aggressively, at least three States (Alabama in 1873, New Jersey in 1864, and Michigan in 1869) had established permanent full-time officials to undertake geological investigations. By the end of the nineteenth century this number had increased to 10 and by 1932 was reported as 30, while the remaining States largely depended upon part-time or incidental university surveying. In several States the Geological Survey is responsible for administrative duties as well as staff surveying, notably in connection with oil regulation and land management. The tendency seems for the geological work to be either incorporated into the State university or into one of the State departments, as conservation.

Conservation of Mineral Fuels.—Governmental control of mineral development on other than the public lands has been very slow in emerging and so far has been limited to the mineral fuels as coal, oil, and gas. The metallic minerals are substantially unaffected by any mineral conservation program of the State governments; and even in the case of the mineral fuels the problem has been more economic than conservational. The crying need has been for governmental intervention to stabilize mining operations by preventing or con-

¹⁸ Volumes were issued up to 1885 by the curator of the State Museum of Natural History which was created in 1877, but no funds were available for field work.

¹⁹ Alabama authorized such a relationship from 1847 to 1858.

trolling surplus production and plant capacity. Insofar as there has been a problem of waste, technology rather than administration has been called upon. Indeed, astounding progress is to be recorded in the field of mining technology, and this development may more than offset the apparent paucity of administrative achievement in mineral conservation.²⁰ The economic character of the Government's interest in the mineral fuels may be strikingly indicated by the fact that all the 19 investigations or hearings before Congress or by specially created commissions between 1913 and 1935 were primarily concerned with price and labor problems of the coal industry, not conservation of coal resources. Even in the case of the voluminous report of the United States Coal Commission, stretching for some 2,700 pages, only two short chapters (on bituminous and anthracite coal, respectively) considered the problem of waste and its prevention. So far the problem of coal has been one of stabilization of production rather than conservation of the resource.²¹

The first expression of State concern with mining apparently dates from a Pennsylvania statute of 1869 (applicable to the county of Schuylkill), which provided for the inspection of coal mines. In the following year this was extended to include five additional counties in the anthracite region and Mercer County in the bituminous field. Not till 1877 was a general mining law passed, and a State-wide bureau did not appear till 1887, when it was put in the Department of Internal Affairs.²² The purpose of the early mining legislation appears clearly from the following provision of the Illinois Constitution of 1870:

It shall be the duty of the general assembly to pass such laws as may be necessary for the protection of operative miners, by providing for ventilation, when the same may be required, and the construction of escapement shafts, or such other appliances as may secure safety in all coal mines, and to provide for the enforcement of said laws by such penalties and punishment as may be deemed proper.²³

Comparatively little legislative progress in coal planning may be recorded other than that relating to conditions of employment, health, safety, wages, and price regulation.

Even such an elementary conservation measure as the regulation of abandoned coal mines, comparable to the required plugging of oil wells, is lacking in most States. A problem that is rapidly becoming acute is that of strip mining. This technique permits greater recovery of coal from the earth (as high as 95 percent) than obtainable by regular underground methods, but it plays havoc with the surface land, unless the operators are required to level off the ground and, perhaps, afforest it, as German mining regulations require.

Legislation for the conservation of oil apparently first dates from a State which has not contributed much to the production of oil but which has traditionally stood in the vanguard of the cause of conservation. This is the State of New York which as early as 1879—two decades after the first oil well had been drilled (in neighboring Pennsylvania)—required by law that abandoned oil wells be plugged, so as to prevent seepage. Pennsylvania passed a similar law 2 years later and in 1885 made the requirement applicable to gas wells. By the end of the century six other States had passed similar laws designed to prevent waste in oil production.²⁴

²⁰ See *Technological Trends and National Policy*, pp. 145-176. Note how mineral technology is frequently more concerned with utilization than with recovery from the earth.

²¹ The problem of production is aggravated by the dispersion of ownership. It has been estimated that there are more than 6,000 competing mines worked by 4,612 commercial operators in 31 States. G. S. Rice, D. C. Fieldner, and F. G. Tryon, *Conservation of Coal Resources* (1936), p. 25. See also Myron W. Watkins, *Oil Stabilization or Conservation?* (1937.)

²² *Pa. Laws* 1869, c. 852; *Pa. Laws* 1877, c. 56. In 1903 a separate department of mines was created. From a study of the State session laws, the spread of mining safety legislation seems to have been as follows: By 1880, 7 States had passed laws, 1881-90, 8 States; and 1891-1900, 9 States; and 5 States in the period since 1900. This list accounts for all the States in which some bituminous coal is produced except Georgia, an examination of whose statutes failed to reveal any safety legislation.

²³ *Art. IV, sec. 29.*

²⁴ *N. Y. Laws* 1879, c. 217; *Pa. Laws* 1881, No. 123; 1885, No. 114. Indiana (c. 33) and Ohio (p. 48) in 1889, West Virginia (c. 56) and Kansas (c. 151) in 1891, Kentucky (c. 39) in 1892, and Texas (c. 49) in 1899.

By far the most ambitious lead was taken by the State of Indiana, particularly with reference to gas. Under the promptings of Blatchley and other farseeing geologists in her State service, a department of geology and natural resources was established in 1889 for the purpose of "preserving" the natural resources of the State. In 1893 waste of oil or gas from open wells was forbidden, and the regulations enforced through the department until 1903, when a State natural gas supervisor was specifically empowered to enforce it.

In most of the other States, however, comparatively little was accomplished in preventing the escape of gas into the air, and in fact the gas was commonly "considered only a nuisance." In 1915 the Bureau of Mines, in stating what it considered the essential requirements of a wise oil-and-gas conservation measure, said that the statute must "not only protect against waste but also insure a market for natural gas, and thus induce producers to conserve gas instead of allowing it to escape, a ratable marketing of all oil and natural gas offered for sales being provided for."²⁵ The prevention of gas waste became one of the particular concerns of President Coolidge's Oil Conservation Board, which was established in 1924. Ely reported that by 1933, 23 States had enacted such legislation.²⁶

The major legal and administrative difficulties of effective oil conservation arise from the rule of capture. Under this rule competitive drilling is the only means available to a landowner to protect his property rights as against abutting owners. The capture doctrine is reported to have originated in Pennsylvania under somewhat accidental circumstances—"at a time when that State was a recent convert to the harsh English rule of percolating waters"—and took root "when engineers knew but little of the forces with which they were dealing and the lawyers less."²⁷ Under this rule the landowner owns the oil and gas in place under his property, but he cannot maintain title to it unless he produces it, i. e., "captures" it. In so obtaining oil it makes no legal difference that the oil and gas actually come from pools under the ground of adjacent owners, for there are no practicable means of identifying the oil. "The off-set-drilling rule (drill-and-produce-as-you-please) as the only means of protecting against adverse drainage" became the inevitable corollary of the capture doctrine.²⁸

Every landowner or his lessee may locate his wells wherever he pleases, regardless of the interest of others. He may distribute them over the whole farm or locate them on only one part of it. He may crowd the adjoining farms so as to enable him to draw the oil and gas from them. What can the neighbor do? Nothing; only go and do likewise. He must protect his own oil and gas. He knows it is wild and will run away if it finds an opening and it is his business to keep it at home.²⁹

The geological fact is the oil pool, not the legal fact of surface ownership. The legal doctrine is showing signs of breaking down under the demands for production control and waste prevention. The courts have begun to "restore" in part certain correlative rights in the landowners which might have been recognized at common law had the first oil and gas cases been tried out after basic knowledge had been placed on a sounder footing.

By far the greatest attention has centered in recent times on the problem of control of production—in terms of the effect upon market prices—rather than prevention of waste or reservation of supply, upon which the former may clearly

²⁵ Annual Report for 1915, p. 80.

²⁶ Oil Conservation Statutes (1933). These States included Alabama, Arkansas, California, Colorado, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Mississippi, Montana, New Mexico, New York, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Utah, West Virginia, and Wyoming. The Washington law listed by Ely applies entirely to State lands under lease.

²⁷ N. Ely, *Oil Conservation Laws*, pp. 5-8. The rule of percolating waters has been since abandoned by most American courts in favor of the rule of correlative rights and reasonable uses.

²⁸ R. E. Hardwicke, "The Rule of Capture and Its Implications as Applied to Oil and Gas," 13 *Texas Law Review*, pp. 391-422 (1935). The phraseological analogy to the common-law rule of wild animals has perhaps eased the problem of State regulation in the sense that the possessor of a property right which has not been completely vested, i. e., oil not yet "captured," cannot ordinarily complain as to the methods prescribed by the State for the vesting of his rights.

²⁹ *Barnard v. Monongahela Natural Gas Co.*, 216 Pa. 362 (1907) at p. 365.

produce an ultimate if indirect effect by preventing suicidal competition and exploitation.³⁰

The first extensive attempt by a State to prevent wholesale waste of oil and (primarily) to curb or stabilize oil production occurred in Oklahoma in 1914, when the corporation commission issued its famous order "forbidding any further drilling, except where necessary to offset wells already drilled or to comply with lease requirements," and fixing a minimum sales price of oil. Practical difficulties rapidly arose—rumors were circulated that the pipe lines had promoted the new policy, disputes arose over practical application of the order to wells that were in the process of construction, there were constitutional doubts as to means of enforcement, and, above all, the price of oil soared upward under wartime demands. As a result State control of oil production lapsed for the time. More than a decade later (in 1926) Oklahoma revived the technique of State production control in the Seminole field by providing for a system of prorating oil production in flush fields, but the proration scheme was shortly extended to include both old and new fields.³¹ In 1931 the Governors of Kansas, Oklahoma, and Texas entered in an informal compact setting State quotas for oil production, the provisions of which were temporarily enforced by martial law in Texas and Oklahoma.

Usually proration is based on market demands, but in one State (Texas) the allowable rate of production is based on the engineering fact of maintaining a uniform reservoir pressure by equalizing the withdrawals of oil, gas, and water in relation to the encroachment of edge water. Studies by the engineering staff of the Texas Railroad Commission for the east Texas field indicate that a "production rate of about 450,000 barrels daily from this field will maintain an approximately constant reservoir pressure, prolong the flowing life of the field, and result in an increased recovery of oil." Under this scheme of control it has been estimated that the oil recovery has increased by at least 30 percent.³² The United States Bureau of Mines has credited the proration device with accomplishing "its primary objective, which was to give current production and current demand at least a semblance of balance during periods of enormous production." In addition to its State of origin, proration has been regularly administered in Texas, New Mexico, Kansas, and Louisiana, which produce three-fourths of all American oil.³³

In 1933 it was concluded in a special study for the Federal Oil Conservation Board that the States possessed the following legal powers, i. e., as demonstrated by existing legislation and tested by litigation:

1. The State may establish a regulatory agency, and delegate to it the power to enforce the statutes, hold hearings, make rules and orders, and enforce them with statutory effect.
2. It may, through its regulatory agencies, regulate drilling; that is, it may require permits to drill and fix minimum spacing requirements, even though the effect is to limit the rate at which the landowner can recover oil.
3. It may protect productive strata, i. e., through casing requirements, regulation of drilling methods, of plugging, of abandonment, use of nitroglycerin, etc.

³⁰ It would be incorrect, however, to leave the impression that this problem was absent during the very infancy of the oil industry. In 1872 price tobogganing had led to a curtailment or shut-down campaign. In 1 field 200 producers signed a pledge not to drill any more wells for 6 months, under penalty of \$2,000 fine. Agitation demanded the cessation of all pumping for 30 days, but no agreement could be obtained. A permanent (in design) producers' protective association was formed and more than a million dollars in subscription was reached. But "even before the agency was formally established, however, there were signs that the shut-down agreement was being violated." John Ise, *United States Oil Policy* (1926), pp. 21-22.

³¹ The order was issued under an earlier antitrust law at the urgent solicitation of many of the producers. In 1915 the Oklahoma Legislature expressly validated the proration order (c. 25). This statute was sustained in *Julian v. Capshaw*, 145 Okla. 237 (1930), and in *Champlin Refining Co. v. Corporation Commission*, 286 U. S. 210 (1931). See J. H. Marshall and N. L. Meyers, "Legal Planning of Petroleum Production," 41 *Yale Law Journal* 33-68 (1931); 42: 702-46 (1933).

³² Statement of Secretary Ickes before House Committee on Interstate and Foreign Commerce conducting hearings on the Connally oil bill, April 27, 1937.

³³ *Conservation of Petroleum and of Natural Gas*, p. 25. Okla. Laws 1933, c. 131; Kans. Laws 1933, c. 226; La. Laws 1934, No. 61; N. M. Laws 1935, c. 72; and Tex. Vernon's Civil Statutes, sec. 6008. See Hardwicke, "Legal History of Proration of Oil Production in Texas," 56 *Texas Bar Association Report*, 99 (1937).

4. It may prohibit and prevent the escape of gas or oil into the air, even though to prevent the escape of gas may make impossible the production of oil.

5. It may classify some uses of gas as wasteful, and prohibit them; thus it may limit the amount of gas that may be produced with each barrel of oil, even though the gas is utilized; it may prohibit or regulate the manufacture of carbon black; and it may prohibit certain other uses of gas, such as in flambeau lights or flares.

6. It may forbid "economic waste" in general terms and enforce the prohibition by restricting production to market demands.

7. It may, without resort to "proration," restrict production as by limiting the open flow of gas and oil, by restricting artificial production devices, restricting transportation pressures, and by requiring certificates of compliance with the conservation laws as a prerequisite to connecting with pipe lines.

8. It may regulate production from a common source (1) by "proration," or (2) possibly by requiring that purchasers take ratably from all offerors, or (3) by regulation of carriers. Proration, which is the allocation among producing wells of some determined outlet for the entire field, may be effected on a number of different bases. Thus the outlet may be determined on a basis of market demand or physical waste, and may be allocated according to "potentials" or otherwise.

9. It may, under particular circumstances, regulate, and possibly require, the operation of a field as a unit.

10. It may fix a production quota for the entire State, and allocate that production among the fields of the State, and prevent discrimination among them by purchasers.³⁴

Unit operation of oil pools is substantially confined to publicly owned areas. It was proposed as early as 1924 by Henry L. Doherty to cope with the evils arising out of the competitive offset drilling and production practice. It is considered impracticable for privately owned fields because the whole attempt is likely to fail if one or more individual owners refuse to join, as is usually the case. So far the State has been successful in compelling owners to unitize their holdings only in the case of the oil fields located within the city of Oxford, Kans., on the grounds of health and fire hazards.³⁵ The most successful adoption of the plan of unit operation has been in the Government fields in the Kettleman Hills (Calif.).

³⁴ Adapted from Ely, *op. cit.*, pp. 86-91.

³⁵ See *Marrs v. Oxford*, 24 Fed. (2) 541 (1928), cert. denied, 280 U. S. 573 (1929). Cf. *Tysco Oil Co. v. Railroad Commission*, 12 F. Supp. 195 (So. Dist. of Tex., 1935) which upheld an order limiting drilling to one well per district (16 acres) and providing for the pooling of expenses and profits.

Part II. SPECIAL TRENDS

Chapter 4. WATER

SUMMARY

State management of water resources first emerged during the canal era when ambitiously planned systems of internal improvements were in vogue in many sections of the country, but most of these proposals either came to naught with the growth of the railroads or their administration suffered from extravagance, waste, and corruption, with the notable exception of the New York canal system. These schemes embodied such "modern" concepts of public-works planning as periodically revised inventories of needed construction projects, adoption of long-range budgets permitting expansion and contraction of activities as synchronous with employment and other needs, and the deliberate adoption as a "maxim of state" of the policy of a "preconcerted plan, formed with the utmost caution, diligence, and skill," which, when it had "received the sanction of legislative authority," ought to be free from all "possibility of deviating from it." With the inevitable passing of the canal era, the responsibility of the States for the promotion and improvement of navigation was superseded by that of the Federal Government, which also began gradually to expand its river activities to relieve localities of the burden of flood prevention. The technique, however, was the construction of individual levees, not that of comprehensive planning of water use.

The increasing pollution of rivers by an industrial civilization led several of the New England States (in the sixties) to experiment with devices of interstate cooperation for the protection and scientific propagation of fish life and permanently to establish the earliest conservation agencies of the State government (which eventually became consolidated with the game agencies that came more than a decade later).

Both drainage and irrigation have remained primarily local enterprises, with no appreciable control exercisable by the State except possibly in the irrigation States of the West, where the power of the State water engineer (1890 onward) to define water rights under the "prior appropriation" doctrine may affect irrigation development. Planlessness rather than planning appears to characterize most State activities in relation to the management of water resources, with a few recent exceptions, as the comprehensive water planning of the California Department of Public Works. This situation may partially explain why water resources have become one of the primary concerns of both the National Resources Committee and the State planning boards.

The record of governmental management of water resources is impressive in both its present extent and history, yet it has achieved for itself no distinctive

position in the administrative hierarchy of most State governments, but is distributed among a variety of independent agencies. For example, the State of New Jersey has 5 independent agencies whose primary function relates to water problems, while 5 other States have 4 agencies, and 12 States have 3 agencies.¹ That the problems of planning and coordinated management of water and its uses are difficult should be obvious from this mere recital of the number and variety of independent agencies that already exist, aside from the question of whether particular phases of the management of water resources may be adequately performed or neglected.

The chapter is divided into sections on (a) the canal era and its "planned systems" of internal improvements; (b) fish and water pollution; (c) flood, drainage, and irrigation; and (d) comprehensive water planning.

The Canal Era: "Planned Systems" of Internal Improvements.—Canals, inland navigation, and internal improvements are all inextricably interwoven about the problems of water and its uses. Navigation is, of course, among the primary uses of water, and its promotion has traditionally been a proper function of governments almost everywhere; but there is a distinct period in American history that is connoted by the term "canal era"—a period starting around 1800 and extending to just shortly after the Civil War when fiscal reverses and technological progress displaced waterways as the primary avenues of continental intercourse. Canals, of course, were to be found in America before the dawn of the so-called "canal era," but they were small and usually of only local significance, like constructions around the falls or rapids of rivers (as on the James River in Virginia) or connections between closely adjacent waters (as the Middlesex Canal in Massachusetts).²

The "canal era" was distinctly a State era, in contrast to a national or Federal era, as far as the management of water resources is concerned. It is interesting to note that the abandonment of the canals,³ however, coincides in point of time with the establishment in 1879 of the Mississippi River Commission by the Federal Government. It has been estimated that by 1890 the expenditures of the States for the promotion of inland navigation totaled more than \$200,000,000, principally for the construction of canals, whereas the Federal Government had spent only half as much. When it is said that the "canal era" was a State era, it should not be implied that proposals were lacking for the assumption of Federal responsibility, or perhaps more frequently, for the provision of Federal financial aid. Two of these proposals will be reviewed in the immediately following paragraphs.

In 1805 there appeared in Philadelphia a provocative pamphlet of some 60 pages. Its author was a "Friend to National Industry," variously identified as Turner Camac or William Blodget. The title of the pamphlet was *Facts and Arguments Respecting the Great Utility of an Extensive Plan of Inland Navigation in America*. Its stated purpose was to demonstrate how "to scatter plenty round a smiling land," in the words of the poet Gray. Its practical address was made primarily to the legislature of Pennsylvania, but its scope was Nation-wide. What is of more interest in these paragraphs (since the pamphlet was more concerned with arguments than the enumeration of projects, in con-

¹ See the chart on pp. 101-102. Likewise in the Federal Government there are a great number of agencies (32) concerned in some way with water use and control. See National Resources Committee, *Federal Agencies Concerned with Water Use and Control*, p. 30.

² The first fiscal set-back to the internal improvements movement came with the panic of 1837 when it was discovered that 18 States had contracted a public debt of 60 million dollars for canal construction, little of which was ultimately recoverable. When the State of Pennsylvania in 1837-38 sold its canal systems to the railroads it suffered a net loss of 60 million dollars. The destruction of State credit, which the orgy of internal improvements is commonly stated to have caused, led to the insertion in many State constitutions of specific prohibitions of the use of State credit for such purposes. See Harold G. Moulton, "Inland Waterways," *Encyclopedia of the Social Sciences*, 15. pp. 377-384.

³ For specific data on the abandonment of canals, see N. E. Whitford, *History of the Canal System of the State of New York, together with Brief Histories of the Canals of the United States and Canada* (1906), appendix. Also see *United States Census of 1880*, vol. IV (devoted to transportation).

trast to Gallatin's work) relates to the *Facts and Arguments Respecting the Great Utility of an Extensive Plan*.

The author was familiar with the criticisms of the competence of the state, but he proposed a practical scheme of accounting control to avoid these hazards. Then he went on to lay down as "*a maxim of state*" a very important principle, namely, that Government should undertake to spend "for many years to come, a considerable sum, suppose \$200,000 a year" for the purpose of canal construction and river improvements. Why should Government do this? The argument is stated in terms of a simple analogy:

Should a person whose capital is abundantly sufficient to enclose, drain, and manure a farm in his possession, suffer it notwithstanding, to run to waste, and instead of expending \$2 an acre upon it, in order to receive \$4 annually, should be contented with the mere *gleanings* which it is capable of throwing up in a state of uncultivated nature, we should not hesitate to pronounce him a very sorry farmer, and even in some degree a nuisance to society. Precisely of the same nature would the conduct of Governments be, were they longer to neglect so fine country as this, and not embrace whatever means were in their power to render it as productive as possible, by one plan of navigation through every part of the Union. Nay, the farmer would, to all appearance, have the most reasonable objection of the two, to the idea of throwing his money away as he might possibly call it; for, if his agricultural experiments did not succeed, his money would be all paid away to persons, who were perhaps utter strangers to him; whereas the sums expended by the country in the prosecution of great works of internal improvement, are all distributed among her own children, go all to feed her own laborers, and in a country situated as this, such a stimulus to industry and enterprise, such a regular and permanent distribution of the circulating medium to those who are willing to earn it and to *no others*, could not fail to be attended with the happiest and most beneficial effects.

The administration of the "comprehensive plan of inland navigation," among other effects, "would form a principal, if not the very chief ingredient to regularity and labor." In more modern terminology, the sentence would have ended with "stabilization of industry and employment." Another effect of comprehensive water planning would be to convert "the entire country into *one great city*, without any of the disadvantages that attend the residence of mankind, in great numbers together, on the same spot."

The "Friend to National Industry" may be charged with optimism in his enumeration of the immediately practical achievements and returns, for example that the money "would be refunded tenfold to the Government;" but he inserted a very important proviso—"If \$200,000 a year wisely and conscientiously expended, in consequence of a preconcerted plan, formed with the utmost caution, diligence, and skill and with the sole view of facilitating trade and industry." This proviso is expanded into an important paragraph, which is quoted in extenso:

No enterprise of this kind will ever be crowned with success, unless the entire plan of it be previously formed, with all its relations and bearings, unless the facts upon which that plan depends be narrowly examined and positively ascertained, unless in short a great deal of trouble and expense be incurred in forming the best dimensions for the locks, the size of the canal, and the enquiry for these purposes, conducted by all the lights that the science, and all the penetration that the exercised understandings of the first men in this country and the best engineers in Europe can possibly contribute. It is from the want of minute and systematic knowledge of this kind, it is from the omission of laboring for years to form an exact acquaintance with the levels by a topographical survey of the country, the altitude and directions of its mountains, the course and depth of its rivers, the obstacles to be overcome, and the means by which they are to be got over, that many projects in themselves perfectly practicable, are looked upon as chimerical, that many more have been attempted which were either in themselves of little use, or were soon relinquished through unforeseen difficulties, and that the business of inland navigation has consisted of a series of lame and abortive attempts, has left an impression very unfavorable to the expediency of encouraging such pursuits in this country. Everything in a matter of such consequence ought to proceed by system, and not be left to the caprice of ignorant and interested individuals; and when once a scientific scheme of operations is maturely framed, the possibility of deviating from it ought to be prevented, by its receiving the sanction of legislative authority.

The other proposal for a national plan of water development came 3 years later (in 1808) when Treasury Secretary Gallatin submitted to the Senate his well-known and well-conceived report on internal improvements. The emphasis in this report was vastly different from the plan just discussed in that it enumerated detailed and well-defined projects rather than general arguments. President Jefferson had anticipated this report in his second inaugural when he suggested that after the redemption of the public debt, which seemed shortly in sight, Federal revenues (particularly from the sale of public lands) might appropriately become available for a "just partition among the States" for such purposes as "rivers, canals, roads, arts, manufactures, education, and other great objects within each State." The President attached two conditions: (1) The adoption of a constitutional amendment and (2) the maintenance of peace. Both conditions failed to materialize, and Gallatin's report was forced to remain a report, after all.

Briefly, Gallatin proposed a system of great canals from the North to the South along the Atlantic seaboard and a series of communications by canals and roads between the seaboard and the Western interior, the St. Lawrence and the Great Lakes. Henry Adams has summarized the plan as follows:

Canals were to be cut through Cape Cod, New Jersey, Delaware, and from Norfolk to Albemarle Sound—thus creating an internal waterway nearly the whole length of the coast. Four great Eastern rivers—the Susquehanna, Potomac, James, and Santee, or Savannah—were to be opened to navigation from tidewater to the highest practicable point, and thence to be connected by roads with four corresponding Western rivers—the Allegheny, Monongahela, Kanawha, and Tennessee—wherever permanent navigation could be depended upon. Other canals were to connect Lake Champlain and Lake Ontario with the Hudson River; to pass round Niagara and the falls of the Ohio; and to connect other important points. A turnpike road was to be established from Maine to Georgia along the coast. To carry out these schemes Congress was to pledge 2 million dollars of the annual surplus for 10 years in advance; and the 20 million dollars thus spent might be partly or wholly replaced by selling to private corporations the canals and turnpikes as they should become productive; or the public money might at the outset be loaned to private corporations for purposes of construction.⁴

The War of 1812 disrupted the condition of peace so essential to Jefferson's scheme of internal improvements. The failure to pass a specific constitutional amendment permitting entry into the field of internal improvements by the General Government led to the Presidential veto of Calhoun's internal improvements bill of 1817. While constitutional scruples waned sufficiently during the "era of good feeling" that Congress in 1824 authorized the President to "cause the necessary surveys, plans, and estimates, to be made of the routes of such roads and canals as he may deem of national importance,"⁵ the Federal Government was slow in getting started in actual construction work. Upon the advent of Jackson's administration the Board of Engineers for Internal Improvement was abolished. During its short career, however, the Board of Engineers had—

set out immediately to plan a national and comprehensive system of internal improvements that could be steadily developed. This system was based on three great projects: First, the canals between the Chesapeake and the Ohio and between the Ohio and Lake Erie, with the improvement of the navigation of the Ohio and the Mississippi Rivers; second, the series of canals connecting the bays north of the seat of government; and third, a durable road extending from Washington to New Orleans. Surveys, plans, and estimates were made for each and duly reported. Despite wide publicity, especially on the proposed road to New Orleans which aroused great interest and many memorials from those regions through which there was even the most remote possibility of its being located, the preliminary steps were the only ones taken. This was the only attempt by the Corps of Engineers to view the country as a whole and to adopt a policy of internal improvements, or

⁴ Henry Adams' *History of the United States During the Second Administration of Thomas Jefferson*, II, pp. 364-365. Gallatin's *Report on Roads and Canals* is printed in the *American State Papers*, XX, Misc., I, pp. 724-921. It was reprinted in 1910 as a Senate Document, vol. 60. "A cursory glance at the map will show that nearly all the States would be recipient of favors at the hands of the General Government by such proposals as he (i. e., Gallatin) brought forth." B. H. Meyer et al., *History of Transportation in the United States Before 1860* (1917), p. 136.

⁵ 4 Stat. 22.

river and harbor improvements, in accordance with that view. Since then the practice adopted by Congress, or drifted into, has been to improve rivers and harbors haphazardly and not as a part of a comprehensive and continuous plan of development.⁶

This report has related elsewhere the development and influence of the Erie Canal,⁷ which holds that unique distinction in American canal history of actually fulfilling, if not exceeding, the expectations of its founders. If the canal era in the other States was not so successful in financial terms, it contains much of interest for the development of the philosophy and methods of comprehensive planning of water. Unfortunately, many of these ideas and methods of planning which are cited below were limited in their contemporary effects to the paper on which they were written, and this neglect may in part account for the general failure which the States experienced in their ventures into the field of internal improvements. Extensive programs of State canal activity have been recorded in Ohio, Pennsylvania, Indiana, Illinois, Georgia,⁸ and the Carolinas, while the States of New Jersey and Delaware relied largely upon the device of incorporating private companies. The rocky terrain of New England easily persuaded the States of that section that railroads, not canals, furnished the most effective mode of inland transportation.⁹ An examination of the legislative provisions cited in the footnotes has prompted the selection of the Carolinas for presentation in illustrative detail as two cases of State planning, in which many of the modern ideas and techniques of public works planning may be noted in their germinal essentials.

The trend of Western settlement appeared to produce a considerable drain on the population of North Carolina, to the serious concern of many of its prominent citizens, particularly Judge Archibald D. Murphey. Largely through his efforts, an engineer was imported from England for the purpose of surveying the State and drafting plans for the development of its internal economy. In part to supply the engineer with background information about the State but also to state to the larger public the case for an ambitious scheme of internal improvements, Judge Murphey prepared his *Memoir on the Internal Improvements Contemplated by the Legislature of North Carolina*, printed at Raleigh in 1819. Judge Murphey first reported his conviction that in—

this day, when political economy has attained to the rank of a science, statesmen will not seek to promote the agriculture of a country by bounties and premiums, but will turn their attention to those ways and means by which, in the first place, the products of agriculture can easily find a good market, and by which, in the second place, the profits of that commerce which sustains the market, shall be contributory to the wealth of their own, rather than of other States.

This sounded expensive, but a creditable collection of statistics was presented to prove that the basic resources and financial condition of the State of North Carolina could well afford an ambitious program for internal improvements to be directly undertaken by the State in the amount of an—

expenditure of \$150,000 annually. It would happen that one-half of that sum would not be required within a particular year, and yet a much larger sum be required for the succeeding year.

But—

these improvements cannot be made unless a systematic plan be adopted and enforced for their execution. The board does therefore earnestly recommend to the general assembly such a plan; and as their attention has long been drawn to this subject, they hope it will not be deemed impertinent

⁶ W. S. Holt. *The Office of the Chief of Engineers of the Army* (1923), pp. 6-7. In 1825 President Monroe transmitted a Report of the Examination which Has Been Made by the Board of Engineers with a View to Internal Improvements, 18th Cong., 2d sess., House Doc. No. 83, Serial No. 117.

⁷ *Infra*, pp. 12-13.

⁸ Ohio Laws 1822, c. 26; Pa. Laws 1825, c. 126; Ind. Laws 1836, c. 2; Ill. Laws 1837, pp. 121-153; and Ga. Laws 1825 pp. 111-113.

⁹ However, in 1825 (c. 22, 99) the Massachusetts Legislature created a commission to "ascertain the practicability of making a canal from Boston to the Connecticut River and extending the same to some point on the Hudson River in the State of New York in the vicinity of the junction of the Erie Canal with that river." But in 1829 the board of internal improvements reported in favor of railroads. Vermont in 1825 (c. 32) appropriated the sum of \$500 to assist Federal engineers in surveying possible canal routes through the State, but that appears to be the extent of canal interest. See Meyer, *op. cit.*, pp. 143-156.

on their part to submit the outlines of such a plan as to them seems most expedient for insuring a judicious execution of the public works which are intended for the improvement of the internal condition of the State: They therefore recommend—

1. That an ample fund be provided and set apart for internal improvements.
2. That a board of public works be formed.
3. That all the public works patronized by the legislature be placed under the superintendence of this board and the immediate direction of the principal engineer.
4. That the funds for internal improvements be applied by the board to the execution of such public works as the legislature may from time to time designate.
5. That all incorporated companies engaged in any public work which is patronized by the legislature be bound to lay before the board at least once in every year an account of their expenditures, and a report of the progress made in the execution of their respective works.
6. That the board report to the general assembly at each session, the state and condition of the public works under their superintendence; the monies expended upon each during the preceding year, and the state of the fund for internal improvements—that they also recommend to the general assembly from time to time such measures as to them may seem expedient for improving the internal conditions of the State.¹⁰

The specific plans submitted by the State engineer related to inlets and sounds on the coast, the primary rivers and their junction by navigable canals, public highways, drainage of swamps and marshes, etc. At its 1819 session the North Carolina Legislature gave heed to Judge Murphey's recommendation by creating a board of internal improvements, which was required to—

Report to the general assembly, at or as near the commencement of every annual session thereof, the exact state of the fund for internal improvement: The progress, condition, and net income of all the public works under their charge; the surveys, plans, and estimated expense of such new works as they may recommend to the patronage of the general assembly.

Charters were granted to several companies, the stock of which was subscribed in large measure by the State.¹¹

In the same year of 1819 the sister State of South Carolina also passed an act establishing a board of public works, consisting of five commissioners. This board possessed very wide powers, some of which closely parallel those required in the preparation of a modern public works inventory. The board was authorized to superintend construction of State works, make contracts, purchase lands for the State, engage in topographic surveying, prepare plans and designs for all public buildings, and obtain from the clerks and sheriffs of each county annual reports (by the first Monday in November) on the actual condition of courthouses and gaols, together with estimates of repairs and future constructions. The board is reported to have spent over a million dollars in the period 1819–22, and one of its projects was the construction of the "State Road" from Charleston to Columbia.¹² One of the engineers of the board submitted in 1822 a rather unique proposal for financing internal improvements, especially in the low country (i. e., embanking, drainage, and swamp reclamation), by having the Negro slaves do the work and thus earn their emancipation. "In short, all now required to give a preference to our State for a residence, whether with a view to profit or pleasure, is reclaiming the low lands from inundation and abolishing slavery."¹³

With the notable exception of the New York canal system, the State canal movement with little success, in part because of the rapid acceptance of the railroads as more efficient means of transportation and in part because of the extravagance, waste, and corruption that attended canal administration. The significance of the ideas discussed in this section cannot be found in the practice of the

¹⁰ *Report of Sundry Surveys Made by Hamilton Fish, State Engineer* (Raleigh, 1819), pp. 7–8. The quoted statement is from the introduction, presumably written by Judge Murphey. The report of the engineer runs from p. 10 to the end (p. 70).

¹¹ *N. C. Laws* 1819, c. 2, sec. 12; Meyer, *op. cit.*, p. 275.

¹² *S. C. Acts and Resolves* 1819, pp. 34–40. Two members of the board were engineers and three were "public-spirited citizens serving without pay." Meyer, *op. cit.*, pp. 257–258.

¹³ Robert Mills (engineer and architect), *Internal Improvements of South Carolina, Particularly Adapted to the Low Country—Respectfully Submitted to the Serious Consideration of the Legislature, and of the Citizens of the State Generally* (1822), pp. 20–21.

State governments; they should be regarded as inchoate ideas that were not given the chance of being put into practice. As such, they belong among the conceptual antecedents of State planning of water resources.

Fish and Water Pollution—Interstate Origins.—Aside from mercantilist legislation relating to the fishery industry, the conservation of fish, as a phase of water-planning history, probably first arose in connection with the river obstructions that maturer settlement always brought in its wake. As early as 1709–10 Massachusetts Bay forbade the erection of any "disturbance or incumbrance * * * on or across any river" that would operate to stop or obstruct the natural passage of fish, "without the approbation and allowance first had and obtained from the general sessions of the peace." With the growth of mills and dams on most rivers it became necessary to order the construction and maintenance of sluices and fishways through or around the dams, turning over to local officialdom the power of enforcement through police or judicial proceedings.¹⁴ Such governmental control over fish life in the rivers and lakes as existed before the Civil War was confined to general legislative declarations or the police orders and enforcement of local officialdom.

It was becoming increasingly evident, however, that some of the States were recognizing how mere police enforcement as a means of fish conservation was quite ineffective. In 1857 the Governor of Vermont sponsored inquiries "into the state of the discoveries which had been made in relation to the artificial propagation of fish, and also to ascertain what legislation of this and other States and Provinces might be requisite in order to secure to this State the benefit of such discoveries." Mr. George P. Marsh, who later became the author of *The Earth as Modified by Human Action* which played such a significant literary role in arousing conservation consciousness, filed a short but able report, in which he concluded that artificial propagation was actually possible and "worthy of public encouragement." Marsh called attention to constitutional obstacles and realistically pointed out that any comprehensive program of artificially restocking the streams of Vermont depended for its effectiveness in no small measure upon the development of corresponding activities on the part of neighboring States. Grave doubt was expressed whether "any mere preventive legislation, however faithfully obeyed, would restore the ancient abundance of our public fisheries." An immediate practicable program of fish propagation was formulated with great caution,¹⁵ but Vermont failed to do anything further for another decade, as related, *infra*.

Massachusetts is commonly accredited with establishing the first State agency for the conservation of natural resources, but the statutory record seems definitely to give this primacy to the State of New Hampshire, which in 1864 called the attention of the neighboring States of Massachusetts, Connecticut, and Maine to the critical fact that—

The rivers and lakes of this State were wont formerly to furnish an inexhaustible supply of salmon, shad, and other migratory fish, which have now entirely disappeared from our waters.¹⁶

Why? The answer was to be found in the construction of impassable dams, many of which were located in other States. It would obviously be a futile expenditure of funds and efforts for the State of New Hampshire to construct fishways over and around dams if the State of Connecticut, through which the

¹⁴ Acts and Resolves of the Province of Massachusetts Bay, I, 644–645; II, 186.

¹⁵ Report Made Under the Authority of the Legislature of Vermont on the Artificial Propagation of Fish (1857), p. 18. Marsh's report contained an abridged translation of essays by Professor Vogt of Geneva and Jules Haime, and a paper by Kellogg on "Experiments in Artificial Fish Breeding" which had been presented to the Connecticut State Agricultural Society in 1856. Similar, if less comprehensive studies of fish culture were made in Ohio (Board of Agriculture Annual Report for 1857, pp. 38–59) and New York (Senate Committee on Agriculture, Report in Relation to Petition of Robert Pell concerning Salmon Fisheries of the State). Marsh suggested that the recent and recurring torrential washes of the Vermont rivers resulted from forest denudation. This became one of the main points in his book, to which reference has already been made in the text.

¹⁶ N. H. Laws. 1861–66, c. 2988. Rhode Island may have a possible claim on the basis of a board of oyster commissioners of 1852, referred to in a brief appendatory note in the Acts and Resolves, 1852, p. 112. No other reference has been found.

rivers subsequently flowed, did nothing to encourage or actually prevented the fish ever reaching New Hampshire on their journey up from the sea. It is of singular interest to note that when the States first became concerned with the administration of conservation that they should think inevitably in regional terms, of what other States were doing and must do if the individual State was to do anything itself.

In 1865 the New Hampshire Legislature authorized the Governor to appoint two commissioners to "consider the subject of the restoration of sea fish to our waters, and the introduction of new varieties of fresh-water fish," and particularly to confer with the neighboring States of Massachusetts, Vermont, and Connecticut. Connecticut was requested "as a matter of comity between the sister States, to so regulate the fishing in that [Connecticut] river as to allow the free and unobstructed passage of all kinds of sea fish." Within the State, New Hampshire provided for enforcing the fishway plan by imposing penalties for the maintenance of dams or weirs on specified rivers "without providing a suitable fishway * * * which shall be approved in writing by the fish commissioners." The effective administration of this legislation, however, was made contingent upon the finding by the Governor of the fact that "suitable fishways for the passage of sea fish over the dams on said river or rivers *below the boundary* of this State shall have been commenced."¹⁷

Massachusetts immediately responded by authorizing two commissioners to confer with representatives of New Hampshire and Vermont and also to investigate the effects of pollution upon fish life, particularly shad and salmon. In 1866 the fish commission was made a permanent State agency with the assigned function to "determine and define the mode and *plan* upon which fishways shall be constructed" and to submit the same "to any board of commissioners empowered to act by the State of New Hampshire, upon the same or similar projects, for their approval." When the plan was thus approved by both States, it should be submitted to the dam proprietors before proceeding with construction.¹⁸

After both Vermont and Connecticut enacted legislation, a meeting was called, in the early part of 1867, at Boston where the commissioners of Maine, New Hampshire, Vermont, Massachusetts, and Connecticut were in attendance "for the purpose of exchanging views and concerting action."¹⁹ Proposing to establish a regional organization known as "New England Commissioners of River Fisheries," the commissioners drafted the following circular:

The New England Commissioners of River Fisheries wish to bespeak the attention and the assistance of all persons who are interested in the restocking of our fresh waters with valuable fish, such as salmon, shad, herring, alewife, trout, black bass, striped bass, and lamprey eel.

These fish, half a century ago, furnished abundant and wholesome food for the people; but, by the erection of impassable dams, the needless pollution of ponds and rivers, and by the reckless fishing, in all ways and at all times our streams and lakes have been pretty much depopulated.

Luckily, the immense natural increase of fishes opens a way to their restoration. We have only to remove the causes of their destruction, and they will multiply enormously, without any care at all.

The causes of destruction are chiefly as follows:

1. Impassable dams. Over these, fishways may be built with little waste of water.
2. Pollution of water by lime, dyes, soap, sawdust, and other mill refuse. Much of all these should not be thrown at all into the water. As to the dirty water from wool or cloth washing, it may be confined to one side of the river by a plank screen placed opposite the raceway.
3. Destruction of young fish by mill wheels, which may be avoided by a lattice placed across the mouth of the mill canal.

¹⁷ N. H. Laws 1865, cc. 4126, 4127, 4099. [Italics added.]

¹⁸ Mass. Laws 1865, c. 45. Pollution was described as the "discoloration of the water * * * caused by the discharge of dyestuffs and other noxious matter therein from the manufactories." Mass. Laws 1866, c. 238.

¹⁹ Conn. Laws 1867, c. 140, Vt. Laws 1867, No. 78. Vermont was also interested in obtaining "concurrent action on the part of the proper authorities of the Dominion of Canada, and of the State of New York" in order to safeguard and promote the fishery interests on Lake Champlain.

4. Destructive modes of fishing, among which we may include gillnets, weirs, very long seines, pots, set hooks, fire fishing, and fishing through the ice; all of which should be by law forbidden.

5. Fishing too much, and at wrong seasons. For migratory fish, certain days in each week should be "closed"—that is to say, no fishing should then be allowed; and the taking of trout on their spawning beds should be rigorously interdicted.

Massachusetts and New Hampshire have already passed laws for the opening of the Merrimack and the Connecticut to sea fish, and for the encouragement of the breeding of valuable fresh-water fish. Fishways have been erected upon the Merrimack, and many thousand salmon eggs have been planted in its upper waters.

By the interest and the assistance of the people at large these cheap and important reforms may be carried through.²⁰

This very auspicious start for cooperative State conservation and development of the fish resources in the New England area was brought to naught by the failure of Connecticut to see that the other States were "fairly dealt with." It was a rather paradoxical result, for Seth Green, distinguished fish commissioner for the State of New York, had assisted Connecticut in establishing "an easy and certain method of increasing shad by artificial propagation." In the words of the Massachusetts report for 1878,

This appears to have been our ruin. It made fishing profitable. It is, to say the least, a most singular specimen of political economy for a State to appoint able commissioners and appropriate money to encourage a great and important industry, and then, on the first tide of success, to virtually surrender it into the hands of a class ignorant of the first principles of fish culture, proverbially reckless of the future, and oblivious of the rights of other States.

This legislation for the establishment of fish administration was all enacted within a comparatively short time, 1864 to 1868, and admittedly as a regional movement along the North Atlantic seaboard. In its central emphasis on what the other States were doing or contemplating, fish conservation presents a unique case in State cooperation on problems affecting the welfare of several States and which no single State can well attack without the aid and cooperative effort of the others. That Connecticut chose the role of the dog in the manger, out of consideration for the sheer temporary selfish interest of the State's commercial fishermen, was unfortunate indeed.

This early legislation was significant in another direction, in proposing an entirely new approach to the problem of conservation of natural resources, by adopting positive procedures rather than relying on the sanctions of criminal law. Fishways were constructed to assure that the fish actually could migrate up and down the streams as of yore despite the obstructions interposed by an industrial civilization, or dams and polluted waters. Scientific propagation assured more fish at less cost than the expenditures needed to prevent the people from catching the few fish that still remained after generations of improvidence. The States were but following the examples of Germany, France, and England, of whose activities the early State reports indicate a keen awareness. Thus the Vermont commissioners acknowledge that they were—

* * * kindly furnished by Mr. Frank Buckland, of London, the Reports of the Inspectors of Salmon Fisheries in England and Wales for several years, and also many valuable articles on the subject of Salmon Fisheries, etc., in "Land and Water," a paper devoted in part to the cultivation of fish.

By 1870 at least 10 States had provided for a State fish agency of somewhat varying powers and financial abilities. All but one were located along the Atlantic seaboard, and this single exception was California on the Pacific coast, which invoked the technical services of the New York commission on many an occasion.²¹ While the first State commissions had built on the technical foundation provided by European administrators and scientists, it was apparent

²⁰ Quoted in Vermont Fish Commissioners, Report for 1867, pp. 5-7.

²¹ The extensive influence of the activities of the New York commission may be indicated by the fact that in 1881 it could report that it had received application for its fish spawn from 31 States in addition to Canada and 3 of its separate Provinces. Report for 1881, p. 72.

that adaptation of these findings to the American conditions was necessary along with much fundamental research. This function became the immediately ascribed task of the United States Fish Commission when it was created by

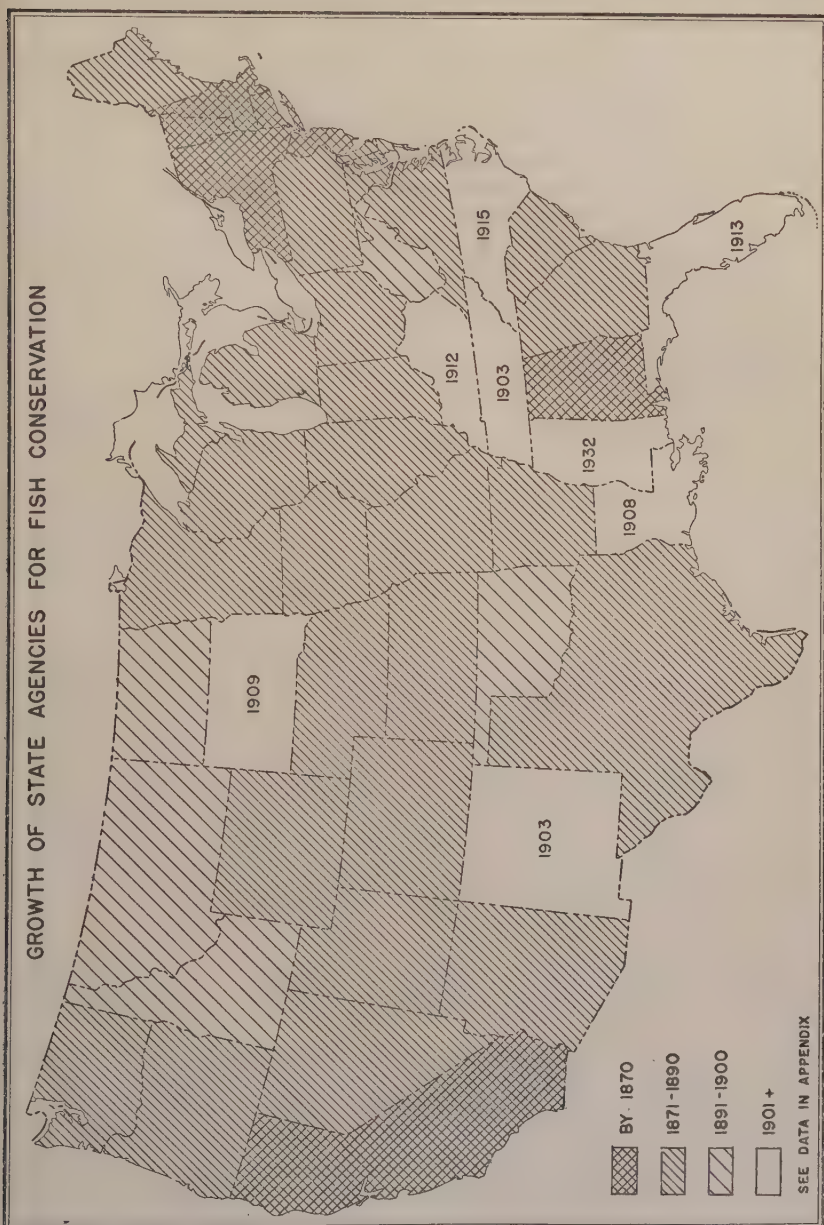


FIGURE 5

Congress in 1871, less than a decade after the appearance of the first State commissions and in response to their promptings as expressed through the American Fish Culturists' Association. Within a year of its official existence,

however, Congress added another function which has rapidly grown to outstrip all others, namely, the artificial cultivation and distribution of food fishes, particularly shad, salmon, and whitefish. The need for this assumption of responsibility by the Federal Government was pointed out in the first report of the commission by Baird:

[The States] have not been disinterested enough to take charge of waters which constitute State boundaries, or where the benefits are likely to be shared, if not entirely reaped, by citizens of other States. For this reason, some of the more important rivers, and the entire system of the Great Lakes, the vast subjects for the experiment, have been entirely neglected * * *.

In the person of its first commissioner, Professor Baird, the Federal Government possessed a man with a tremendous range of knowledge and interests whose common denominator was his strong belief in the efficacy of the scientific method. In making his plans for the systematic investigation of the waters of the United States and the biological and physical problems presented, Professor Baird refused to limit the study to food fishes, as the statutory authorization easily suggested, "but insisted on building a broad foundation of investigations purely scientific in character."²²

Professor Baird was interested not merely in cooperation of the Federal Government with the States and stimulating them to cooperate among themselves in mutually solving their problems, but also in laying the ground work for cooperation among the Federal scientific bureaus, having—

* * * the various workers supported or aided by the Government join together as associates and friends, not as rivals, in the increase and diffusion of knowledge. This meant the development of a special morale based on high principles which would give Government service a dignity rare in other quarters of the capital. He would weed out all those who in Cassin's words, "look on science as a milch cow, rather than as a transcendent goddess." To a large extent he was successful in these aims; and it is not too much to say that in the seventies and eighties Government science reached a degree of dignity and effectiveness it had not before possessed.²³

The establishment of a Federal agency for the government of fish contributed greatly to the momentum which had already reflected itself in the creation of 10 State agencies by 1870. Within the decade 20 other States were added; and by the end of the nineteenth century, only 7 States appeared not to have established some State agency for the conservation of fish.²⁴

The function of the Federal Government in prompting the States to engage in fish administration can be illustrated by the following incident from Illinois. In 1875 the State Fish Culture Association urged the Governor to appoint a fish commissioner, though legislative authority was lacking, for the purpose of receiving on behalf of the State its due proportion of fish spawn to which it was entitled under the act of Congress; and 4 years later the legislature remedied this statutory defect.

The subsequent growth of the State fish agencies has been so closely associated with game administration that the two subjects have been treated together in chapter II.

Flood, Drainage, and Irrigation.—The States appeared to have played somewhat minor roles in the management of water resources for the purpose of the prevention of floods and the promotion of drainage and irrigation, in contrast to the Federal Government and localities which, respectively, have been primarily concerned therewith. Furthermore, Federal concern with flood prevention is a relatively recent phenomenon so that during the greater part of the

²² U. S. Fish Commission, *Report for 1908*, p. 1383. By employing numerous young naturalists for field investigations during their summer vacations from the universities, Baird was able to "develop in the aggregate more research than he could personally have accomplished had he refrained from his executive burdens" (*Dictionary of American Biography*, I, p. 515). This research was particularly carried on at the rough field headquarters at Woods Hole, Mass., where a few summer students were invited to work on the abundant materials that were daily brought in. From this informal beginning has grown the present great marine laboratory of Woods Hole.

²³ *Dictionary of American Biography*, I, p. 515.

²⁴ See Appendix A.

past century the water problems of floods, drainage, and irrigation were all matters of primarily local concern.

At the famous Memphis convention of 1845, which advocated Federal responsibility for the promotion of navigation along the "great thoroughfare" of the Mississippi, John Calhoun strongly denied that the General Government should concern itself in any way with the flood problem, except possibly by the indirect method of making land grants to the States, as was shortly done (1849-50).²⁵

Frequently, however, the construction of specific navigation projects (particularly those straightening river courses) actually aggravated the flood problem. In the Louisiana Parishes of Rapides and Avoyelles (one of the finest sections of alluvial lands in America) no protective levees had been needed until the extension of protective works up the river caused the recurrent rise and overflow of floodwater, and this region finally became inundated with every large flood.²⁶ In fact, the scattered local efforts at flood protection by levee constructions resulted in a "process by which the country above is relieved" by ruining "the country below." "The water is supplied by nature, but its height is increased by the works of man." Already in 1852 Ellet had foreseen the dangers of "the greater frequency and more alarming character of the floods" and attributed the situation to four causes:

Primarily, to the extension of cultivation throughout the Mississippi Valley, by which the evaporation is thought to be, in the aggregate, diminished, the drainage obviously increased, and the floods hurried forward more rapidly into the country below.

Secondly, to the extension of the levees along the borders of the Mississippi, and of its tributaries and outlets, by means of which the water that was formerly allowed to spread over many thousand square miles of lowlands, is becoming more and more confined to the immediate channel of the river, and is, therefore, compelled to rise higher and flow faster, until, under the increased power of the current, it may have time to excavate a wider and deeper trench to give vent to the increased volume which it conveys.

Thirdly, to cut-offs, natural and artificial, by which the distance traversed by the stream is shortened, its slope and velocity increased, and the water consequently brought down more rapidly upon the country below.

Fourthly, to the gradual progress of the delta into the sea, by which the course of the river, at its embouchure, is lengthened, the slope and velocity there are diminished, and the water consequently thrown back upon the lands above.

It is shown that each of these causes is likely to be progressive, and that the future floods throughout the length and breadth of the delta, and along the great streams tributary to the Mississippi, are destined to rise higher and higher, as society spreads over the upper States, as population adjacent to the river increases, and the inundated lowlands appreciate in value.²⁷

It is apparent from these quotations that Ellet viewed the flood problem of the Mississippi Valley as an interrelated entity whose solution could be obtained only by means of comprehensive action throughout the entire watershed, not by means of local or individual efforts alone.

Ellet proposed to cope with the flood problem by six "distinct plans" which, nonetheless, could be made to "harmonize with each other, and may be carried on simultaneously." These plans included the construction of levees, the prevention of cut-offs, the formation of an outlet of the greatest attainable capacity, the enlargement of bayous and channels, and "the creation of great artificial reservoirs, and the increase of the capacity of the lakes on the distant tributaries, by placing dams across their outlets, with apertures sufficient for their uniform discharge—so as to retain a portion of the water above until the floods have subsided below" and thus compensate "for the loss of those natural reservoirs which have been and are yet to be destroyed by the levees." It

²⁵ South-Western Convention in Memphis, November 12, 1845, *Journal of Proceedings*, pp. 7-14.

²⁶ A. D. Frank, *History of Flood Control on the Lower Mississippi* (1930), pp. 63-64.

²⁷ Charles Ellet, *The Mississippi and Ohio Rivers: Containing Plans for The Protection of the Delta from Inundation; and Investigation of the Practicability and Cost of Improving the Navigation of the Ohio and Other Rivers by Means of Reservoirs* (1852), pp. 17-18, 95, 107.

appeared to Ellet that "nothing will more forcibly impress the mind of the practical man" than "the comprehensive study of the grand and beautiful problem of controlling their waters" (i. e., of the Mississippi and its tributaries); but he also realistically conceded the "distrust with which some of his views on subject have been, and may yet be for a season, regarded."

When a Mississippi River Commission was eventually established in 1879, little actual change in the techniques of river control and utilization took place, for the construction of levees was retained as the predominating policy in preference to the concept of the "comprehensive plan."²⁸ For a discussion of some fragmentary experimentation with flood prevention by means of the "comprehensive plan," see the concluding section of this chapter.

Governmental control of water-power development under the Federal Water Power Act of 1920 has remained in a large measure a national concern because the principal dam sites are located on navigable streams or within the public domain.²⁹ Proposals have been current at various times in some States for public water-power development, as shortly after the Civil War when several New England Governors pointed out the need for public action, but nothing seems to have come of these proposals.³⁰

Drainage and irrigation are sectional complements of the problem of water and land use—too much and too little water. Drainage is concentrated primarily in the Mississippi Valley, where eight States in 1930 accounted for approximately three-fourths (72 percent) of all drained land in the United States, whereas irrigation is largely confined to the West where six States accounted for almost three-fourths (70 percent) of the total irrigated land.³¹ Both activities are largely local in administration, i. e., special ad hoc districts carry on the enterprise. Such control as is exerted over drainage enterprise is largely judicial, with the result that it is very difficult to find any trends of State planning. While the States appear to have no operating responsibility in the irrigation field, considerable directive control of the development of irrigation projects seems to have been exercised through the office of the State water engineer.

With the pushing of the line of settlement steadily westward into the "arid regions" of the United States—as Director Powell characterized the area in his famous report of 1878—the determining factor in agricultural development turned out to be not so much the quality of the land as its accessibility to water and the dependability of the supply. The first extensive settlement in the West by the Mormons in 1849 had clearly recognized the vital importance of the water problem and had adopted a comprehensive policy of irrigation, but most other settlers were neither so far visioned nor so inclined to cooperative enterprise.³²

As early as 1866 Congress had recognized the crucial need for water in Western development by conferring a right-of-way over the public lands for ditches and

²⁸ The Commission was directed to "take into consideration and mature such * * * plans and estimates as will correct permanently locate, and deepen the channel and protect the banks of the Mississippi River, improve and give safety and ease to the navigation thereof; prevent destructive floods," etc., 21 Stat. 37, sec. 4. In 1884 Congress created a Missouri River Commission (23 Stat. 144) and in 1893 a California Debris Commission (27 Stat. 507). Frank stated, "By far the strongest part of the accusation that the U. S. Government has helped to create the flood problem of the delta rests upon the relation of flood-control works in various areas to the cause of floods in other areas." *Op. cit.*, p. 62.

²⁹ See Jerome Kerwin, *Federal Water-Power Legislation* (1926); F. A. Fairlie, "Public Regulation of Water Power in the United States and Europe," 9 *Michigan Law Review*, pp. 463-483 (1911); and R. D. Brown, "The Conservation of Water Power," 26 *Harvard Law Review*, pp. 601-630 (1913).

³⁰ The Governor of New Hampshire in 1867 urged the development of water power as a means of curbing the abandoned farm movement. *Message*, pp. 9-10. A preliminary report was issued in 1870. Hasse's *Index* also cites reports in Vermont (1872), Ohio (1876), and New York (1873), but little seems to have resulted from these reports. Fairlie pointed out certain State agencies (as the Rhode Island Commissioner of Dams and Reservoirs, *Laws* 1896, c. 124) were authorized to approve plans for dam construction with the view to assuring safe construction. *Op. cit.* Fairlie also cites the creation of the Wisconsin Valley Improvement Co. (*Wisc. Laws* 1907, c. 335) for the purpose of developing and controlling the State's water power, but no traces have been found of the activities of this agency.

³¹ Cf. U. S. Bureau of the Census, *Drainage of Agricultural Lands, 1930; Irrigation of Agricultural Lands, 1930*.

³² See C. S. Kintney, *A Treatise on the Law of Irrigation* (1912), secs. 82, 242, 245-250, describing the Mormon restoration of the old Mesa Canal, the settlement in Utah, the Greeley Colony in Colorado, and the Anaheim and Riverside projects in California. See also R. H. Hess, "The Beginnings of Irrigation in the United States," *Journal of Political Economy*, XX, pp. 807-833 (1912).

canals that were used in connection with mining and agriculture.³³ In 1873 George P. Marsh, referred to above and then minister to Italy, prepared a paper at the request of the Commissioner of Agriculture on the subject of irrigation and the methods employed by foreign governments in promoting soil reclamation. Recognizing the "evils and difficulties of the practice of irrigation," Marsh nevertheless concluded that "nearly all the evils which ordinarily attend the practice may be avoided, or at least greatly mitigated." There was "danger that, with our characteristic impetuosity and love of novelty, we shall, especially in the comparatively rainless new States and Territories of our vast empire, engage too readily and too inconsiderately in an agricultural process which, in many cases, may be attended with disadvantages more than sufficient to counterbalance the gains from its adoption." Both the Federal and State Governments, he thought, ought to engage in collecting and diffusing information about irrigation, conduct experiments for developing new knowledge, and particularly undertake continuous hydrographical surveys. In the long run this would not be adequate, Marsh argued, for Government must actually assume the ownership and operation of irrigation works:

Such works will seldom be properly and securely constructed by private persons or bodies, and the management of them by individuals, and especially by corporations, will always be liable to abuse and gross corruption. No irrigation works, in fact, except for the distribution of water over private grounds, after it has once been withdrawn, under Government supervision, from Government sources of supply, ought to be intrusted to private hands. There are, no doubt, serious objections to the assumption of such burdens and such responsibilities by republican governments, but there are also graver and, as I think, insuperable objections to any other system.³⁴

In 1878 Major Powell reported on *Lands of the Arid Region*, contrasting the dependable character of irrigated farming with ordinary agricultural practice. Successful irrigation depended upon the construction of huge storage reservoirs that would assure adequate water supply through 2 or 3 successive years of drought. The dangers of water monopoly would be avoided through the firm refusal to allow private persons or corporations to hold water rights for potential future use against the actual needs of settlers.

A decade later Major Powell undertook his irrigation survey under the specific Congressional authorization to investigate—

the extent to which the arid region of the United States can be redeemed by irrigation, and the segregation of the irrigable lands in such arid regions, and for the selection of sites for reservoirs and other hydraulic works necessary for the storage and utilization of water for irrigation and the prevention of floods and overflows.

Significantly suggestive of an intention to adopt a comprehensive irrigation policy, Congress at the same time reserved from entry "all the lands which may hereafter be designated or selected by such United States surveys for sites for reservoirs, ditches, or canals for irrigation purposes, and all the land made susceptible of irrigation." Under this sweeping authority the Powell Irrigation Survey ordered the segregation of 127 reservoir sites and over 30 million acres of irrigable land. Widespread protests from affected interests in the arid region led to the appointment of a Senate investigatory committee and within 2 years (1890) effected the repeal of the reservation clause except as to reservoir sites, and forced the discontinuance of appropriations for the irrigation survey.³⁵ Such work (particularly the topographic maps and stream measurements) as the survey accomplished before being hamstrung by Congressional disapproval furnished much of the basic data later used by the Reclamation Service.

³³ 14 Stat. 253. This enactment was followed by a series of bills to benefit special irrigation ventures. See D. Lampen, *Economic and Social Aspects of Federal Reclamation* (1930), p. 16.

³⁴ 43d Cong., 1st sess., Senate Misc. Doc. No. 55, at pp. 3-4, 15-17.

³⁵ Brookings Institution of Government Research, U. S. Geological Survey (1918), p. 18. 25 Stat. 526. 26 Stat. 391. In 1891 the exception was narrowed by limiting the site area to "only so much as is actually necessary for the construction and maintenance of reservoirs" (26 Stat. 1101).

While Congress was thus legislating Powell's work out of existence, the Great Plains were experiencing the validity of his predictions in the form of the terrible drought of 1890. Deriving from the foresighted efforts of a Nebraska editor (Wm. E. Smythe of the Omaha Bee, who subsequently launched the Irrigation Age), there emerged successively on local, State, regional, and national levels the device of irrigation congresses. Among the immediate achievements of this movement on the national level was the passage of the Desert Act of 1891, and the Carey Act of 1894, which offered to the States of the arid region desert land "not exceeding 1 million acres in each State," on the condition that the State undertake to have such land "irrigated, reclaimed, occupied, and * * * [[in part]] cultivated by actual settlers" within a 10-year period. In the 8 years between the enactment of the Carey Act and that of the Reclamation Act in 1902, but seven States took steps to avail themselves of the former by applying for slightly more than 1 million acres (out of a potential 7 million), and out of these seven States, but four actually qualified (with a total land area of 600,000 acres).³⁶ The reason was very clear; it had been clear to Marsh, Hinton, and Powell: Reclamation called for engineering efforts beyond the abilities of private enterprise. In 1897 Captain Chittenden reiterated the need for governmental responsibility in his report on *Reservoirs in the Arid Region*, and, in fact, advocated a far-flung program of governmental ownership and operation of irrigation works. By 1900 the major political parties had adopted platforms pledging governmental irrigation.

Thus, the Reclamation Act of 1902, which was passed by Congress with little opposition and promptly signed by President Theodore Roosevelt, represented—an evolution involving a continuous elaboration and refinement which has proceeded along the lines, first, of encouraging individual effort and leaving reclamation wholly to private enterprise; next, on finding this insufficient, of attempting to interest various arid States by the terms of the "Carey Act"; and finally of the passage of the national measure, urged by the people of the whole country.³⁷

Unlike most other Federal activities, however, reclamation has proceeded "with little cooperation on the part of the States having projects within their borders. These States have no formal authorization for such projects nor have they any responsibility for their construction, settlement, and operation." The whole enterprise has been conducted "between the Federal Government and the settlers."³⁸

Although the States appear to operate no irrigation projects, they are able to exercise some directive control over irrigation development by administrative adjudication of water rights under the "prior appropriation doctrine," as well as through the various functions performed by the State engineer or other special administrative bodies concerned with water uses.³⁹ Under the Arizona water code of 1919 the State water commissioner is authorized to make surveys and water investigations and to control the "beneficial use" of the waters of the State by issuing permits and approving plans for water projects, according to a system of "classified priorities" of water use ((a) domestic, (b) irrigation and stock, and (c) water power and mining).⁴⁰

The first State official to be concerned with irrigation appears to have been the California State engineer of 1878, but his functions were entirely investigatory, and the office was abolished in 1891. In 1890 the State of Wyoming

³⁶ C. Wooddy, *The Growth of the Federal Government* (1934), pp. 529-530. In practical effect the Carey Act was accepted only by the States of Idaho and Wyoming.

³⁷ Lampen, *op. cit.*, p. 47.

³⁸ *Economic Survey of Certain Federal and Private Irrigation Projects* (1929), p. 64. This report recommended that the "States ought to participate in reclamation activities." p. 65. In 1934 the same recommendation was made by Messrs. J. W. Hawes and F. E. Schmitt in their special report to the Secretary of the Interior on *Federal Reclamation*, p. 9.

³⁹ See generally M. Lasky, "From Prior Appropriation to Economic Distribution of Water by the State—via Irrigative Administration," 1 *Rocky Mountain Law Review*, pp. 161-216, 248-70; II, pp. 35-58 (1920-30); and S. C. Wiel, "Public Control of Irrigation," 10 *Columbia Law Review*, pp. 506-19 (1910), "Theories of Water Law," 27 *Harvard Law Review*, pp. 530-44 (1914) and "Public Policy in Water Decisions," 1 *California Law Review*, pp. 11-31 (1912).

⁴⁰ *Ariz. Laws* 1919, c. 164. For a general (if somewhat out-of-date) discussion of State control of water use, see Kinney, *op. cit.*, ch. 68.

established by its constitution the office of State engineer to "collect facts, and make surveys to determine the most suitable location for constructing works for utilizing the water of the State, and to ascertain the location of the lands best suited for irrigation." As head of the State board of control the engineer would participate in the adjudication of water rights. In 1895 the Wyoming Legislature empowered the State engineer to approve plans for water projects. In 1895 Idaho also created the office of State engineer with similar power of approval of local plans, while Nebraska established an irrigation board to perform the same function.⁴¹ Such were the principal developments till after the passage of the Federal Reclamation Act of 1902. In the following year (1903) three States provided for the office of the State engineer, and in 1905 four other States established the office, one of them (North Dakota) adopting a comprehensive water code. Extensive water codes have since been adopted by Oregon (1909), California (1913), Washington (1917), and Arizona (1919), while in 1907 New Mexico created the office of State engineer and in 1913 Texas established a board of water engineers.⁴² With the establishment of these administrative agencies, the tendency was for them to assume a position of growing dominance in the definition of water rights, except in some eight irrigation States where the courts still define water rights independently of other State officials or administrative body. In only two States does the administrative agency define water rights without any judicial intervention, whereas in nine States the administrative body furnishes the court with the principal information for adjudication.⁴³ By and large, the development of irrigation projects has thus proceeded without much comprehensive guidance.

Comprehensive Water Planning.—State attempts at the comprehensive planning of water uses are few in number at the paper stage and obviously fewer or perhaps nonexistent at the stage of administration. Only a handful of instances have come to the attention of the writer after extensive investigation and conferences with water specialists.

One of the States to become concerned with the planning of the water supply systems of highly industrialized-urbanized areas was New Jersey. In 1882 the legislature created a State water supply commission to "determine upon plans for the storage of any waters of the State for the purpose of furnishing to cities and towns a joint water supply" upon the voluntary application of municipalities. No applications having been received during the first year of the commission, it was authorized in the name of the State to undertake the investigation and surveys upon which to base the "best practicable plan" for systems of water supply, distribution, and sources, in relation "to the future growth of the population and the industrial and commercial interests of the State and all parts thereof, and to the public health."⁴⁴ In 1884 a report was filed outlining a plan for a joint water supply system in the Passaic River Basin of northeastern New Jersey and specifying minimum conditions of water development:

1. A construction that would not only meet present requirements but provide for a supply for a reasonable number of years in the future.
2. That it be capable of extension as needed.

⁴¹ Calif. Stats. 1877-78, c. 429. In 1889 (c. 218) the legislature provided that 2 years later the State mineralogist was to serve as ex officio State engineer. In 1913 (c. 586) California created the water commission as an "administrative and quasi-judicial body having supervision over the acquisition and defining of water rights." Wyo. Laws 1890-91, c. 8, sec. 9; 1895, c. 45. In 1881 (Laws, p. 119) Colorado had established the office of State engineer, but it remained relatively inactive till 1903 when the irrigation laws were substantially amended (c. 126). Idaho Laws 1895, p. 215; Nebr. Laws 1895, c. 69. These enactments were clearly in response to the Carey Act of 1894.

⁴² Colo. Laws 1903, c. 126; Nev. Laws 1903, c. 4; N. D. Laws 1905, c. 34; Okla. Laws 1905, c. 21; Oreg. Laws 1905, c. 228; S. D. Laws 1905, c. 132; Utah Laws 1903, c. 100; Ariz. Laws 1919, c. 164; Calif. Laws 1913, c. 586; Oreg. Laws 1909, c. 216; Tex. Laws 1913, c. 171; Wash. Laws 1917, c. 117; and N. M. Laws 1907, c. 89.

⁴³ The eight States in which courts determine water rights are Arkansas, Colorado, Idaho, Kansas, Louisiana, Montana, South Dakota, and Texas. The two States in which an administrative agency determines water rights are Nebraska and Wyoming. The nine States in which the court determines water rights on the basis of information collected by the administrative agency are Arizona, California, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, Utah, and Washington. In Nevada between 1903 and 1915 the administration determined water rights without court intervention. *Irrigation of Agricultural Lands*, p. 25.

⁴⁴ N. J. Laws 1882, c. 189, 1883, c. 186.

3. That the first cost should not exceed a sum the interest on which would not be greater than the annual expenditure for water of the cities and towns supplied.
4. That the cost of extension should be moderate, as this would encourage municipalities in the districts to avail themselves of water from the proposed works.
5. That the water should be pure and not liable to contamination in the future.
6. That the head should be such as to make it practicable to extend the supply to elevated points in the district.⁴⁵

No action was taken on the 1884 report, appropriations for further study lapsed, and the attention of the State government meanwhile shifted to the flood problem. In 1907 a second water supply commission was established, and in 1911 it submitted a "plan for a joint municipal water supply, under State ownership." This led to the creation in 1916 of the North Jersey Water Supply Commission for the purpose of constructing and operating municipal water supply systems where the cities voluntarily engaged the services of the commission. In 1929 a water policy commission was established to investigate problems of water supply and pollution, flood prevention, drainage and irrigation, water power, and navigation, "to the end that a complete plan be finally presented for the economical and comprehensive development * * * of all the water resources in each of the principal watersheds." The commission was given the power of approval over future water development projects;⁴⁶ but, as the commission noted in its 1936 report, there are "today 25 public supplies and 10 private supplies endeavoring to furnish water for 150 contiguous municipalities" while "one combined water system could give better service and be more readily expanded."

In 1917 Kansas provided for a water commission to prepare a "systematic general plan for the complete development of each watershed in the State in order to secure the most advantageous adjustment of the interests involved in the matter of floods, drainage, irrigation, water power, and navigation."⁴⁷ Insufficient appropriations were forthcoming to carry the work beyond stream gaging and in 1927 the commission was abolished. In the following year, however, a special flood control and conservation committee reported to the Governor on the "great need for a State policy and plan for the control and use of the water resources of the State," by coordinating the different uses of water, and recommended that local water projects should be submitted for approval by the State water engineer in the agricultural board.⁴⁸

Perhaps the most comprehensive activities in the State planning of water are to be found in the division of water resources⁴⁹ of the California Department of Public Works which was authorized in 1929 to "explore, investigate, and make preliminary plans in furtherance of a coordinated plan for the conservation, development, and utilization of the water resources of California," in cooperation with appropriate State and Federal agencies. The Department reported to the 1931 legislature on the *State Water Plan*.⁵⁰ Among the cooperating agencies on the State level were the universities, highway commission, departments of natural resources and public health, and the railroad commission, while on the

⁴⁵ North Jersey District Water Supply Commission, *Report for 1925*, p. 244. Much of the account of New Jersey has been adapted from this report.

⁴⁶ N. J. *Laws* 1916, cc. 70-71; 1927.

Simultaneously with these New Jersey activities, Massachusetts had established a metropolitan drainage commission for the Boston area in 1881. In 1886 the State board of health was empowered to approve local plans for the construction of waterworks. One of the board's recommendations resulted in the supplanting of the drainage commission with a metropolitan sewerage commission in 1889. The State health board made a special survey of the water supply systems of 30 municipalities, finding startling variations in methods and services, and recommended the establishment of a metropolitan agency with adequate powers and resources to cope with the sanitation problem of the Boston metropolitan area. This was approximated in 1919 by the creation of the metropolitan district commission, as a State agency functioning in a highly urbanized area. Generally, see Paul Studenski, *The Government of Metropolitan Areas in the United States* (1930), p. 32.

⁴⁷ Kan. *Laws* 1917, c. 172. The act provided for cooperation with Federal agencies and also set forth a declaration of fundamental water-use principles (sec. 6).

⁴⁸ Kansas Flood Control and Water Conservation Committee *Report*, p. 28. In 1929 Michigan established a stream control commission to prevent pollution (Act 245); in 1933 Maryland established a water commission (c. 526).

⁴⁹ The division of water resources is an outgrowth of the water commission of 1914 (c. 406).

⁵⁰ California Department of Public Works, Division of Water Resources, *Bulletin No. 25*. Bulletins No. 26-36 deal with specific phases and areas of the State water plan.

Federal level were included the Departments of War, Interior, Agriculture, and Commerce, and the Federal Power Commission. In the introduction to the report water studies were listed as made in 1873, 1878, 1880-88, 1900, 1911 (by the State conservation commission), 1912, 1921-23, 1925, and 1927. Approximately one million dollars had been appropriated for investigation.

The famous 1930 State water plan set forth—

the main hydrographic divisions of the State, the available water supply, the water requirements for all purposes, the major units of an engineering plan for the ultimate development of the water resources in the principal areas of the State, the units of the plan which should be built first to relieve distress in the highly developed areas deficient in local supplies, investigations in progress in minor but important areas, legal problems that confront the execution of the State plan, together with suggestions for remedial measures, and economic and financial aspects of initial units of the plan would aid in the solution of California's water problem.

Aside from these few examples, the substantial work of governmental planning of water uses is now being undertaken as a pioneer task by the National Resources Committee, its water consultants, and the State planning boards.

Part II. SPECIAL TRENDS

Chapter 5. HUMAN RESOURCES

SUMMARY

State conservation of human resources is a reflection of the theory that all the members of the State should enjoy certain minimum standards of life, consistent with the total resources of the State and their effective utilization. This principle is carried out in practice by the State through the extension of aid to those areas and classes which are unable with their own resources to attain for themselves those standards that the State has accepted as necessary to the well-being of its people. Such standards have existed with reference to education since the earliest days of the Republic and with reference to health since the middle of the nineteenth century. Labor standards have developed from the regulation of child (1836) and women (1863) labor to the administration of industrial safety (1877) and workmen's compensation (1910), while hour and wage standards for the vast mass of the working classes are still in the process of making. The institutional care of the handicapped (insane, deaf, blind) emerged as the earliest State responsibility in the welfare field, even before the establishment of State boards of charities (1863), but State-wide systems of "public welfare" (the phrase dates from 1917) have received their greatest stimulus from the social-security program of the present day.

Once the policy of human standards has been accepted by the State, the trend is toward raising the standards and increasing their coverage. The trends outlined in this chapter are to be regarded as an illustrative rather than exhaustive examination of the kinds of standards prevailing in the State conservation of human resources, for these standards tend to become ever more inclusive as the responsibility of the State supersedes that of the individual and the local community. It is significant that the States appear to have made no sustained efforts at the comprehensive conservation of human resources in the period before 1933. Such action as has been taken has been confined to education, health, labor, welfare, recreation, as separate State activities, although the emerging concept of "social security" may signify a new departure.

Human resources are the most important assets of the State. This statement may appear trite, but it is one that needs to be stressed for it is frequently ignored in much of the discussion about the nature of resources conservation. In crass terms of dollars and cents, it has been estimated that the human resources of America have a total value of more than 800 billion dollars, a sum which is "enormously more than the total value of all the property of every kind in the entire United States."¹ Such figures are too huge for ordinary comprehension and

¹ Ellsworth Huntington, "The Conservation of Man," in A. E. Parkin and J. R. Whitaker, *Our Natural Resources and Their Conservation* (1937), p. 559.

are cited to illustrate rather than to prove the basic importance of human resources in the planning activities of modern States. These figures, however, do suggest that the conservation of human resources is a "matter of practical economy as well as humanity."²

The central importance of human resources in modern conservation also arises from the fact that the State controls natural resources only in terms of their effect upon human activities and for the purpose of promoting such activities. Land, water, and minerals have no intrinsic value, but they do assume roles of definite importance insofar as they contribute to making the modern State better suited to the needs and desires of its citizens, who collectively constitute the human resources of the State. In this sense, all that has been discussed in the preceding chapters belongs on the agenda of a study of human resources. This chapter, however, is designed to approach the subject of human resources in somewhat more limited terms and to select for discussion some of the major ways in which the State has deliberately undertaken to conserve its human resources.

The human resources of the State are the human beings that live, or are about to live, in the State. How can the State conserve so complex a resource as its human beings? The problem of conserving the people's health received formal recognition in the first report of the National Conservation Commission (1909), which contained a long section on "National vitality, its wastes and conservation."³ It is clear, however, that the scope of State conservation of human resources covers more items than bodily health and, in fact, tends to become ever more inclusive as the State assumes greater direct responsibility for the people's welfare.

The growth of those State activities which are traced in this chapter is a result of the increasing recognition by democratic government of its obligation to further the attainment of certain minimum standards of life, opportunities, and services by all its people. This recognition has arisen out of the grave concern felt by the modern State that all of its parts should enjoy such life standards as are consistent with the total resources of the State and their effective utilization.⁴ Where it becomes impossible for certain areas or classes to achieve such standards without outside help the State has accepted the responsibility of supplementing individual effort directed toward this end. For some time such public standards have already existed with reference to education and health and, to somewhat lesser extent, labor and welfare. Once the State has accepted the concept of human standards, the trend is for the standards to become higher and more inclusive. A difficult problem arises out of the fact that frequently the efforts at human conservation are concentrated where least needed from the standpoint of the future; for example, the largest sum for education per child is spent and the proportional number of physicians, dentists, and nurses is largest where children are fewest.⁵ In order to correct these inequalities, it may prove necessary for the State to increase public services among the underprivileged classes and areas. These State trends toward the establishment and expansion of human standards have emerged concomitantly with the steady shift of social responsibility from the individual or the local community to the State and Nation.

The purpose of this chapter is to outline, without laborious detail, the growth of the concept of human standards as the predominating trend in the State conservation of human resources. It has been possible to trace this develop-

² Charles E. Merriam, "Outlook for Social Politics," *American Journal of Sociology*, XVIII : p. 684 (1913).

³ III, pp. 620-751. This section, which was prepared by Prof. Irving Fisher, of Yale University, was divided into the following subsections: "The length of life versus mortality," "The breadth of life versus invalidity," "Methods of conserving life," and "Results of prolonging life." See the recent report of the National Resources Committee on *The Problems of a Changing Population* (1938).

⁴ "Statecraft is concerned with the economic system as a whole and with securing the optimum employment of the system's entire resources." J. M. Keynes. *The General Theory of Employment, Interest, and Money* (1936), p. 340.

⁵ Huntington, *op. cit.* See also *The Problems of a Changing Population*, pp. 180-89, 216-20.

ment only with reference to a limited number of State activities—education, health, labor, and welfare—which are taken to typify the principal ways in which the State governments have, in the period before 1933, assayed their paramount task of conserving human resources. This list of State activities does not pretend to be inclusive nor is the treatment exhaustive, for both requirements or either would easily turn the chapter into volumes.

The chapter is divided into four sections. The first section discusses the rise of standards in the field of *education* from compulsory attendance to a comprehensive system of public schools, ranging from the common schools through the high schools to the apex of the State university and including special facilities for the education of the handicapped and the provision of State aid for underprivileged areas. The section on *health* relates the growth of State sanitation as the defense of organized society against the terrible scourges of disease and the concerted efforts at improving the people's health among all classes and in all areas of the State. The *labor* section outlines the growth of State intervention to regulate for persons of certain ages and sex, the number of working hours, safety conditions, the provision of industrial compensation and rehabilitation, the concurrence of employment and employees, and the setting of minimum wages. The chapter closes with a *welfare* section which traces the growth of State institutional care of certain classes of the population, the establishment of State welfare systems, and the provision of grants-in-aid to localities for the care of dependent children, old-age pensions, and unemployment relief.

It is significant that none of the States appears to have made any sustained attempts at comprehensive conservation of human resources. The States have been interested in education, health, labor, and welfare as separate and largely unrelated activities, frequently undertaken as "stopgaps." Such activity as has existed has been particularistic, not comprehensive, although the emerging concept of "social security" may indicate a new departure.

Education.—One of the most distinctive features of American democratic theory was the early insistence upon equality of educational opportunity, to be guaranteed by the establishment of a permanent system of public education "ascending in regular gradation from township schools to a State university."⁶ This policy obtained expression in America during the first days of settlement, and it is still in the process of achievement.

Public education in America derives from an act passed by the Colony of Massachusetts Bay in 1642, barely two decades after the original settlement. This famous act required that all the children of the Colony should be taught to "read and understand the principles of religion and the capital laws of the country." Town officials were empowered to impose fines on parents and masters who were remiss in training their wards "in learning and labor and other employments profitable to the Commonwealth." In its essence, the Massachusetts law of 1642 contemplated a scheme of compulsory education, although the instruction was private (i. e., by the parents and masters) and heavily tinged with Calvinism.

The next step—education at public expense—was taken 5 years later, in 1647, when the General Court of Massachusetts expressed such concern over the devious working of Satan, "that old deluder," in preventing "men from a knowledge of the Scriptures * * * by keeping them in an unknown tongue," that the statute has gone down in American educational history as the "old deluder law." The learning of the Commonwealth, said the General Court, was threatened with burial "in the graves of our fathers" by the widespread success of Satan in "persuading from the use of tongues." To combat the devil and also promote the cause of education, the General Court provided that (a) every town of 50 householders or more should appoint a teacher of reading and writing

⁶ Indiana Constitution (1816), IX, 2.

(his wages to be provided as the particular town should itself determine) and (b) every town of 100 householders should establish a grammar (Latin) school to fit youths for the university.⁷

Unfortunately these laws soon fell into disuse. The realization of the policy of free public education of all children hardly came before the middle of the nineteenth century and then, largely in the urban areas of the Northern States. Tax-supported public schools did not become mandatory upon all communities within any State till the passage of a Massachusetts law in 1827, and the adjective "free" was added to the school system by the New York referendum of 1850.⁸

The idea of public education as a "first duty" of the State, and, as Governor DeWitt Clinton added, "the surest evidence of good government,"⁹ did not, however, dissipate in the interim. Both during and immediately following the Revolution much attention was given to education as an emergent function of democratic government. The Northwest Ordinance of 1787 declared that "schools and the means of education shall be forever encouraged" and similar pronouncements are to be found in many of the State constitutions of the period.¹⁰ There were also current numerous plans for State educational systems. One of the best known of these plans is perhaps that of Dr. Benjamin Rush who, in his *Thoughts Upon the Mode of Education Proper in a Republic* (1798), argued for a general and uniform system of public education as necessary to the preservation of republican ideals and democratic equality. Other ambitious plans were also prepared by James Sullivan (1788), Noah Webster and Robert Coram (1791), Nathaniel Chapman (1793), Samuel Knox (1797), and Samuel Smith (1798). The plans of Knox and Smith had been prepared for submission for the prize offered by the American Philosophical Society for "the best system of liberal education and literary instruction adapted to the genius of the Government of the United States; comprehending also a plan for instituting and conducting public schools in this country, on principles of the most extensive utility." James Sullivan's plan recommended that men of superior talents should be "scattered through the States, whose whole attention should be paid to that science, which among moderns has obtained the name of political arithmetick." Du Pont de Nemour, close friend of Thomas Jefferson, implemented the Virginian's plan for the common schools (based on the "hundred") by an elaborate system of selection and education of geniuses on the principle that "a single day of an educated man of genius is of more value to the world than the labor of 100,000 average men for a period," provided, du Pont carefully noted, they "were trained to use them rightly."¹¹

Secondary and higher education were also recognized as part of the educational responsibilities of democratic society, although naturally following upon the establishment of the common schools. As early as 1797 Massachusetts adopted the policy of aiding "academies," designed to open "the way, for all people, to a higher order of instruction than the common schools can supply;" but the academies were largely private in management and suspect in many communities for their tendencies toward exclusiveness, reaching their "highest development in the country as a whole in 1850" when there were more than 6,000 such insti-

⁷ *General Laws and Liberties of Massachusetts in 1648* (Huntington Library Collection), p. 11. Professor Knight cites complaints that the laws of 1642 and 1647 were "shamefully neglected by divers towns." *History of Public Education in the United States* (1929), p. 106. In 1636, the General Court of the Colony had provided a grant for the establishment of Harvard College.

⁸ E. P. Cubberly, *Public Education in the United States* (1934), pp. 163, 177; *Mass. Laws 1827*, c. 143.

⁹ Quoted by Cubberly, *op. cit.*, p. 155.

¹⁰ The constitutional arguments in favor of State support of education have been summarized as follows: "(1) In a democracy the safety and existence of the State depends upon the education of the people; (2) education is essential to the economic well-being of the State; (3) a system of public schools is the most effective agency at the disposal of the State for the elimination of such social evils as crime and pauperism; (4) the education of the child is a natural right of the individual and it is the duty of the State to educate children for their own welfare as well as the welfare of the State." L. O. Garber, *Legal Implications of the Concept of Education as a State Function* (University of Chicago dissertation, 1932), p. 33. Cf. U. S. Bureau of Education, *Expressions on Education by American Statesmen and Publicists* (Bul. No. 28, 1913).

¹¹ A. O. Hansen, *Liberalism and American Education in the Eighteenth Century* (1926), pp. 48, 85, 110, 191. Cf. Educational Policies Commission, *The Unique Function of Education in American Democracy* (1936), c. II.

tutions. In 1853 the State of New York permitted localities to take over academies and manage them as part of the educational system of the State, and in 1859 Massachusetts required the larger towns of the State to maintain secondary schools. All doubt as to the legitimacy of high schools as an essential part of the public school system was removed by the decision of the Michigan Supreme Court in the celebrated *Kalamazoo case* in 1874.¹²

Higher education was added to the public-school system by the establishment of State universities and colleges. The State institutions of higher learning appeared first in the Southern States, as North Carolina (1795), Georgia (1800), Virginia (1825), and Alabama (1831), and also in the Middle West, as Indiana (1820), Michigan (1841), Wisconsin (1850), and Minnesota (1851). These tendencies were mightily reenforced by the Morrill Act of 1862 which, by the grant of public lands, led to "the creation of a Nation-wide system of colleges maintained by public taxation and designed to democratize higher education and provide scientific and practical knowledge to the great mass of the people." The subsequent growth of State higher education has also been strongly aided by the Federal Government under the Hatch Act of 1887 which provided funds for agricultural experiment stations and the Smith-Lever Act of 1914 which provided grants for extension services. In all these instances the provision of Federal aid served to universalize existing patterns of State educational activities. At the time of the Morrill Act there were State institutions of higher learning in at least 10 States, as there were agricultural experiment stations organized in 19 States at the time of the Hatch Act, and extension activities in more than half the States at the time of the Smith-Lever Act.¹³

The State cannot rest content with merely providing educational facilities; it must also insist that the facilities be used. In a very crude way the colonial law of 1642 had recognized this problem. Compulsory education in its modern form, however, dates from a Massachusetts act of 1852 which provided that all children of the ages 8 to 14 should attend school for 12 weeks during the year, at least 6 weeks of which must run consecutively. But the growth of a minimum standard of education which all must attain was very slow. By 1870 only one other State (Vermont) had even passed a law; and in 1889 when compulsory education legislation had been enacted in 25 States, only 2 States (Massachusetts and Connecticut) were reported to be enforcing the law. By 1900 nearly all Northern and Western States had at least passed laws, and by 1918 the legislative pattern was completed. The early laws usually left the matter subject to local option, but gradually the laws assumed mandatory form applicable to all areas of the State, increased the period of attendance, extended the age limits upward and downward, provided administrative mechanisms of enforcement, and eventually (Wisconsin, 1911) connected compulsory education with child-labor legislation, to which it was obviously complementary. There is still little uniformity among the States. The period of minimum attendance varies from no stated period in Alabama to the full school year of 9½ months in Connecticut, while the age limits range from 6 to 18 years in Ohio to 9 to 15 years in Oregon. Nor is enforcement of the laws effective in some areas.¹⁴

The American State seems to have become first concerned with education as an administrative function, in contrast to the enactment of legislation, when the State of New York in 1812 established the office of superintendent of public schools. The function of this first State administrator of education was to pre-

¹² Mass. Resolves 1796, cc. 44-45 (approved in 1797); I. L. Kandel, *Comparative Education* (1933), p. 791; N. Y. Laws 1853, c. 354; *Stuart v. School District No. 1 of Village of Kalamazoo*, 30 Mich. 69 (1874).

¹³ U. S. Office of Education, *Survey of Land-Grant Colleges and Universities* (1930), pp. 5-35; A. C. True, *A History of Agricultural Education in the United States, 1785-1925* (1929), pp. 45-91; and U. S. Office of Education, *Federal Relations to Education* (1930), pp. 30-34, 41, 224-29.

¹⁴ Mass. Laws 1852, c. 240; Knight, *op. cit.*, pp. 563-564; and Kandel, *op. cit.*, pp. 490-491. The *Social Work Yearbook 1937*, p. 136, reports that the enforcement of compulsory school attendance laws is directed by State authorities in 10 States, while in 8 others the State authorities have power to prescribe the qualifications of local enforcement officials.

pare plans for the improvement and management of the common school fund, furnish educational information, and digest the educational experiences of localities and other States.¹⁵ In 1821 partisan politics led to the abolition of the office and the transfer of its functions to the secretary of State *ex officio*. In 1826 Maryland established a State educational office, only to abolish it in 1828; but in 1829 the State of Michigan created a State office of education which has remained permanent.

The State educational office thus appeared relatively early in the history of American State administration and, once established, spread quite rapidly among the States, as appears from the accompanying map. By 1840 13 States (principally in the middle Atlantic and Ohio Valley) had established an educational agency. By 1860 the number had doubled to 26, and within the next decade 15 other States acted. By 1890 there were central educational offices in all the States except two, and in 1913 the last State (Delaware) acted to make the administrative pattern complete. (See fig. 6.)

The function of State educational offices was largely confined in the early period to the promotion and encouragement of local educational activities by compiling statistics, making special studies and reports, especially on the scope and method of European education (as in Horace Mann's celebrated seventh report to the Massachusetts Board of Education in 1843).¹⁶ With the maturity of the educational system, some of the State departments have come to play very significant roles in shaping educational policies and in carrying them into execution, particularly in those States which derive educational revenues largely from State funds rather than local taxation.

It is somewhat curious to note that State aid for educational purposes was considerably higher in the period 1890-1900 than it is at the present time, although the downward trend appears to have been arrested in 1925, and the proportion of State aid is on the increase. State aid became necessary "as we emerged * * * from an agrarian civilization" into one in which wealth was concentrated in particular areas, raising problems of "inequalities both in educational opportunities offered and in tax burdens of the local school districts." In 1874 Massachusetts was prompted to provide State funds for educational purposes in the rural areas, and by 1905 eight States (chiefly in the East) had adopted educational equalization laws, designed to safeguard a minimum educational program below which no locality would be allowed to go, but above which any locality could go by means of local support. Paul Mort states in his *State Support for Education*:

A century ago the battle for free State schools was the battle to attain the objective of community responsibility rather than family responsibility for education. Today, the objective of the same battle, not entirely won, is the acceptance of responsibility by the State to the degree necessary to offset unjustified educational inequalities among districts.

Some State aid is available in all the States, but there are very great variations in amounts and types of aid, ranging from 92.9 percent of total school revenues in Delaware to less than one percent in Colorado and Wyoming. Special aid for the transportation of pupils is available in 31 States.¹⁷

Along with raising the educational level of the general population and of certain areas by means of the grant-in-aid device have also gone efforts to provide

¹⁵ N. Y. Laws 1812, c. 247. In 1784 (c. 15) the State had established a board of regents of the University of New York, and in 1795 (c. 75) the State began to make annual grants-in-aid to localities for educational purposes, discontinued in 1800. Abolished in 1821, the office of superintendent of public instruction was reestablished in 1854 (c. 97).

¹⁶ The Massachusetts law of 1837 (c. 241) provided that the educational office should "collect information of the actual condition and efficiency of the common schools and other means of popular education; and diffuse as widely as possible throughout every part of the Commonwealth information of the most approved and successful methods of arranging the studies and conducting the education of the young, to the end that all children in this Commonwealth, who depend upon common schools for instruction, may have the best education which those schools can be made to impart."

¹⁷ Paul R. Mort, *State Support for Education* (1933), p. 4 *et seq.* The quotations in the text are from pp. 23, 33, 75. U. S. Office of Education, *Biennial Survey of Education, 1933-34*, p. 21. Cf. E. P. Cubberley, *School Funds and Their Apportionment* (1905), and S. H. McGuire, *Trends in Principles and Practices of Equalization of Educational Opportunity* (1937).

educational facilities for special classes of children. In 1823 the State of Kentucky established a school for the deaf, in 1853 Massachusetts opened a State school for idiotic and feeble-minded youth, and in 1873 national aid was made available

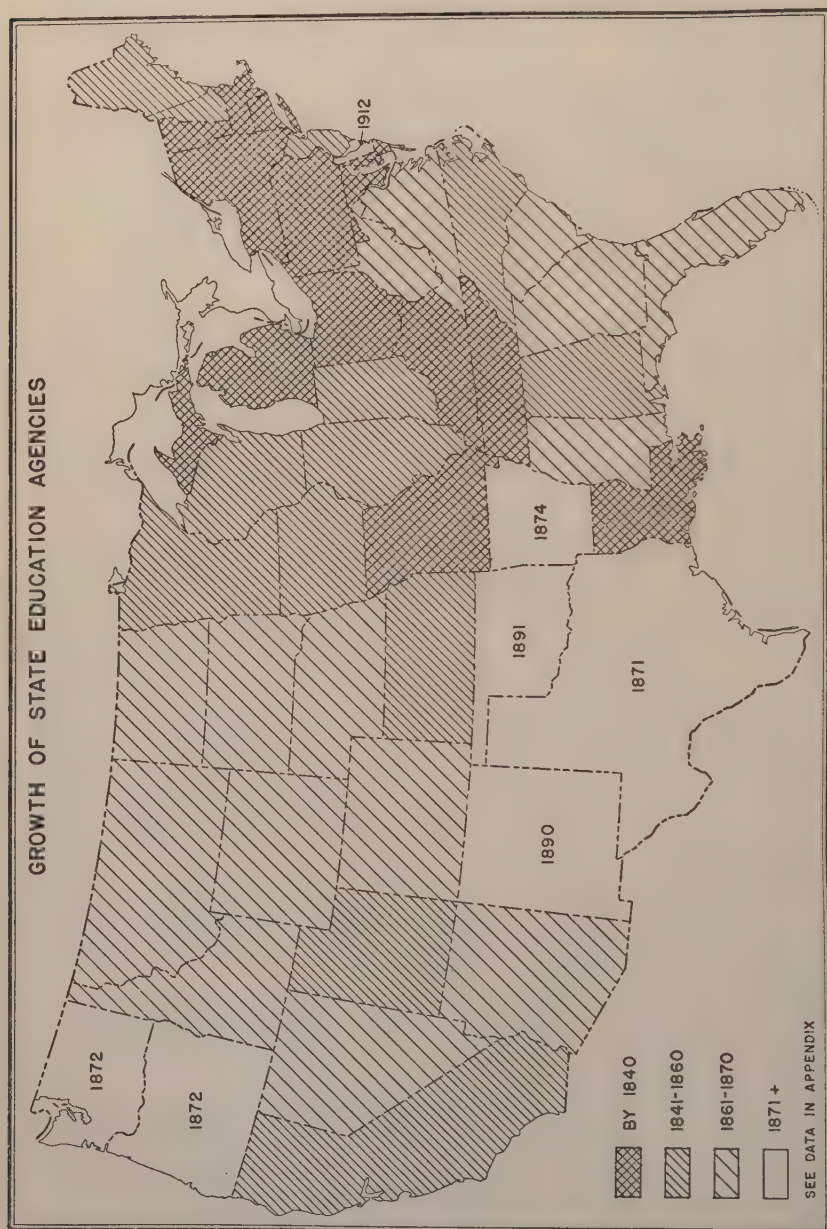


FIGURE 6

Prepared in office of the National Resources Committee

to the American Printing House for the Blind at Louisville, Ky., and the post office directed to carry books free for the blind. Crippled children were first provided with special educational facilities in 1907 when Massachusetts opened a State institution. The trend has been for other States to provide similar

facilities and to extend their scope, so as to assure the handicapped of minimum educational opportunities with which they had to dispense in earlier days.¹⁸

Vocational education is a relatively recent function of State education, and its course of development has been strongly influenced by Federal grants-in-aid under the Smith-Hughes Act of 1917. However, in 1906, more than a decade before the enactment of the Federal law, Massachusetts had established a State commission on industrial education to superintend the creation and maintenance of industrial schools for which State aid was made available in modest amounts. Other agencies were established in New York in 1909, in Wisconsin in 1911, and in the 5 States of Connecticut, Indiana, New Jersey, Pennsylvania, and Virginia in 1913, making a total of 10 States by 1917. The effect of the Smith-Hughes Act of that year was to universalize the pattern.¹⁹

The concept of free public education for all the members of society was early in origin, but it was only gradually that the public schools have evolved into comprehensive State systems ranging from minimum attendance in the common schools through the high schools to the apex of the State university, and including as well the provision of special facilities for the education of the handicapped and the extension of State aid to underprivileged areas for educational purposes. The validity of educational standards is generally appreciated, but much remains to be done in realizing them to a fuller degree among various classes and areas of the State.

Health.—Both the drama and the effectiveness of human resources conservation are illustrated in the rise of the public-health movement. The horrible plagues and epidemics of bygone days have passed. The life expectation of man has been increased, while the death rates from particular diseases have greatly declined. In the case of tuberculosis alone the death rate has dropped from 200 per hundred thousand in 1920 to less than 60 in 1933.²⁰ The achievement of public health becomes all the more remarkable when it is recalled that during the same period which witnessed so much progress in improving the people's health, the country became urbanized, concentrating the Nation's population in the big cities. The growth of cities raised such problems in relation to the life and death of the modern community as the maintenance of an adequate sanitary water supply and waste disposal. The record of public health is convincing evidence of what the State can do if, when challenged, there are both the opportunity and the will to invoke the aid of modern science and technology in the service of humanity.

Public health is also unique in another respect—in the exercise of wide legal powers by the State, for in no other field of governmental activity are such sweeping powers over persons and property so drastically administered in the interests of the great community, with the usual concurrence of the courts. But it would be error indeed to leave the impression that all is well with the people's health, for the conditions of certain underprivileged areas and classes may threaten to take as heavy tolls as once did cholera and the yellow fever. The responsibility of the modern State for the health of its citizenry is continuous and ever challenging.

During colonial times governmental activities were comparatively little concerned with health, the promotion of which was regarded as an individual, or at best a local, problem that sporadically appeared in the form of epidemics. In 1631 Virginia provided for the collection of vital statistics and in 1639 undertook to regulate the practice of medicine, but so were many other trades and professions subject to regulation. Public notification of smallpox outbreaks was required in Rhode Island in 1721; but when attempts were made at health administration

¹⁸ Knight, *op. cit.*, pp. 578-583.

¹⁹ See *Monthly Labor Review*, July, 1931, p. 6.

²⁰ Huntington, *op. cit.*, p. 568. See also *The Problems of a Changing Population*, pp. 166-74.

as a regular governmental function they were promptly abandoned without any fair trial. For example, the Massachusetts maritime quarantine of 1648 was repealed in the following year, and when a similar regulation was reenacted in 1669 it was forthwith disallowed by the Privy Council in England as too stringent an interference with commercial shipping.²¹

The promotion of public health was incorporated into governmental organization first on the local level, starting with the Baltimore Board of Health in 1793. In 1797 Massachusetts passed a State-wide enabling act for the establishment of local health boards to make the necessary regulations "for the public health and safety respecting nuisances, sources of filth, and causes of sickness." Many localities, however, established their health boards on the authority of special charters or legislation, and, in fact, more health boards were established in this manner than under the general enabling laws whose enactment was relatively slow until after the Civil War. Ordinarily, local health authorities were established prior to the creation of a State health authority, but in 13 States, State and local health authorities were established simultaneously and in 5 States the State authority preceding local organizations.²²

The problems of sanitation, which were particularly aggravated in the seaport towns, called for a unit of health administration that could exercise control over larger areas and during continuous periods of time. It is a paradox that "the greatest scourges of the Nation—smallpox, yellow fever, and cholera—proved also the best instruments in hastening the day of sanitary organization." The first State health authority in the United States (established by Louisiana in 1855) was "in reality a quarantine board called into being by the yellow fever epidemic." The prototype of the modern State health authority is more commonly ascribed to the Massachusetts board of 1869 which was established to "make sanitary investigations and inquiries in respect to the people, the causes of disease, and especially of epidemics and the sources of mortality and the effects of localities, employments, conditions, and circumstances, on the public health."²³

Other States were quick to follow the Massachusetts example. By 1890 central health authorities had been established in 34 States, and by 1907 the pattern was made complete for all the States. (See fig. 7.) An important factor in this growth of State health activities was the establishment of a National Board of Health in 1879 to "obtain information upon all matters affecting the public health, to advise the several Departments of the Government, the executives of the several States, and the Commissioners of the District of Columbia, on all questions submitted by them, or whenever in the opinion of the board such advice may tend to the preservation and improvement of the public." The National Board of Health was also authorized to "report a plan for a national public health organization, which plan shall be prepared after consultation with the principal sanitary organizations and the sanitarians of the several States of the United States, special attention being given to the subject of quarantine, both maritime and inland, and especially as to regulations which should be established between State and local systems of quarantine and a national quarantine system." Committees of eminent experts on yellow fever

²¹ J. A. Tobey, *Public Health Law* (1926), p. 10.

²² See J. W. Kerr and A. Moll, *Organization, Powers and Duties of Health Authorities* (U. S. Public Health Bulletin No. 54, 1912), pp. 8-11; *Mass. Laws 1792-1800*, p. 794.

²³ *Mass. Laws 1869*, c. 42 0; Kerr and Moll, *op. cit.* Puerto Rico is reported to have established a health agency (i. e. a quarantine authority) in 1788, but it appears to have been short-lived, and in 1898 a new health agency was created. *Ibid.* In 1806 there was established for Philadelphia a health board to function throughout its metropolitan area. See Paul Studenski, *The Government of Metropolitan Areas in the United States* (1930), p. 257.

An interesting forerunner of the Massachusetts State Board of Health of 1869 was the temporary sanitary commission of 1850, the chairman of which was Lemuel Shattuck. The report of the commission submitted 50 recommendations, including the following: "17 * * * in laying out new towns and villages, and in extending those already laid out, ample provision be made for a supply, in purity and abundance, of light, air, and water; for drainage and sewerage, for paving and for cleanliness * * * 21 * * * that wide streets be laid out, and * * * ornamented with trees * * * 38 * * * tenements for the better accommodation of the poor be erected in cities and villages * * * 41 * * * measures be taken to prevent, as far as practicable, the smoke nuisance." The report is reprinted in George C. Whipple, *State Sanitation* (1917), pp. 239-367.

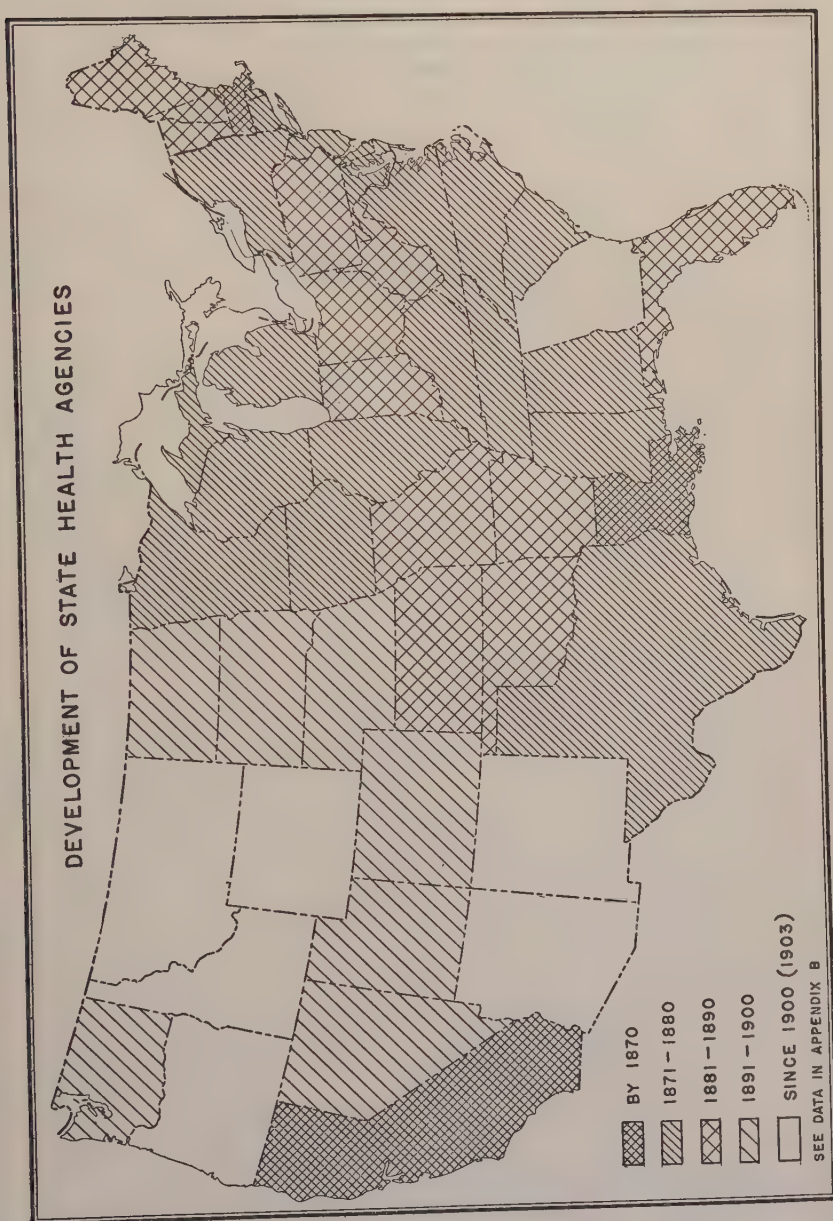


FIGURE 7

were assembled, financial aid was made available to the States for research purposes, and special surveys of particular areas were made.²⁴

Some of the State health authorities (especially those limited to quarantine activities) suffered serious relapses in activity; but with the passing of the quarantine and epidemic phase of the public-health movement—i. e., compulsory suppression of disease by isolation instead of prevention and treatment—and the emergence of sanitary engineering and preventive medicine on a large scale in the nineties, public health has been put on a permanent basis in the State governments.

With the growth of knowledge and the development of specialized branches of health service, such as epidemiology, vital statistics, sanitary engineering, and public-health laboratory service, the work of the health department became more rational. For a time, however, the activities relating to disease control to a large extent were centered around special diseases, such as tuberculosis, venereal diseases, malaria, typhoid fever, diphtheria, and hookworm disease. During the past 10 years there has been a tendency to broaden and balance the work, with a view to applying all available knowledge regarding disease prevention.²⁵

Child hygiene and rural health are among the more recent problems that the State health departments have begun to cope with in their effort at raising the health standards of the State. In 1912 the Louisiana State Health Department organized a division of child hygiene, and in 1914 a division of child hygiene was established by law in the New York State Health Department. In the course of the next 3 years 10 other States acted, and in 1919 alone 20 States took steps to provide for some child hygiene organization, largely as a result of the "Children's Year" sponsored by the United States Children's Bureau. By 1921 when the Sheppard-Towner Act made available Federal aid for maternity and infancy hygiene, special child-health units had been organized in all but 10 States, which then rapidly fell into line, completing the administrative pattern in 1925. In 1929 Federal aid was withdrawn, only to be reincorporated in fuller form by the Social Security Act of 1935.²⁶

Rural-health work was, like most governmental activities in the field of human resources, local in origin, deriving from the work of Jefferson County in Kentucky in 1908, Guilford County in North Carolina and Yakima County in Washington in 1911. State aid for rural health first became available in 1916 when North Carolina appropriated \$400, while in 1917 the United States Public Health Service was authorized to expend modest amounts for demonstration purposes. By 1933 rural-health agencies had been organized in 38 States, in 2 of which the entire health costs were borne by the State, while in 32 others the State contributed some aid (which increased from less than one-half of 1 percent in 1916 to approximately 20 percent in 1933). The principal development of State aid for rural health took place in the decade 1916 to 1925 when 27 States acted to provide assistance. From studies made by the United States Public Health Service it appears that larger proportions of the rural population are served by full-time health organization in the South than elsewhere, in part because of the assistance of the Rockefeller Foundation which has made direct grants to rural-health authorities since 1916.²⁷

²⁴ 20 Stat. 484; repealed in 1893 (27 Stat. 449). See R. D. Leigh, *Federal Health Administration in the United States* (1927), pp. 479-481.

²⁵ J. A. Ferrell, *Health Departments of the States and Provinces of the United States and Canada* (U. S. Public Health Bulletin, No. 184, 1936), pp. 50-51.

²⁶ M. P. Ravenel, *A Half Century of Public Health* (1921), pp. 318-319; 42 Stat. 135; and U. S. Children's Bureau, Pub. No. 203 (1931).

²⁷ The growth of State aid for rural health after the pioneer action of North Carolina in 1916 was as follows: 1917, Louisiana, South Carolina, and Virginia; 1918, Mississippi; 1919, Alabama, Georgia, Kentucky, Tennessee, and Texas; 1920, Kansas and Ohio; 1921, Maryland and West Virginia; 1922, California, Illinois, Iowa, Missouri, and Oregon; 1923, Indiana and South Dakota; 1924, Oklahoma, Pennsylvania, and Utah; 1925, Arkansas, New Mexico, and Wyoming; 1926, New York; 1927, Delaware; 1928, Michigan and Montana; 1929, Idaho; 1930, Arizona; 1931, Florida. In Delaware and Pennsylvania the program is entirely State supported. In four States the program is entirely local: Colorado (1925), Massachusetts (1927), Minnesota (1923), and Washington (1911). No rural health activities were reported for Connecticut, Maine, and North Dakota. See J. A. Ferrell and P. A. Mead, *History of County Health Organizations in the United States, 1908-33* (U. S. Public Health Bulletin, No. 222, 1936).

The conservation of the people's health has proceeded from the defense of organized society against the terrible scourges of epidemics to the rise of State-wide sanitation and recent concerted efforts at improving the health of underprivileged classes and areas of the State.²⁸

Labor.—"Labor legislation in the United States as in England began with the regulation of child labor." The first American labor law was passed by Massachusetts in 1836 forbidding the employment of any child under 15 years of age in any manufacturing establishment unless he had attended school for at least 3 months during the preceding year. In 1842 the number of hours that a child could work were limited to 10, while in 1848 Pennsylvania set a flat minimum age of 12 years. But the general progress of child-labor legislation, not to speak of the enforcement thereof, was very slow. By 1879 only 7 States had fixed a minimum age below which no child could work, and only 12 States had set maximum hours beyond which no child could work. According to Commons' *History of Labor in the United States*, the "typical child-labor law" of 1900 remained "limited in scope to children employed in manufacturing; set a minimum age of 12 years; fixed maximum hours at 10 per day; contained some sketchy requirements as to school attendance and literacy; and accepted the affidavit of the parent as proof that the child had reached the legal minimum age."²⁹

The trend has since been to develop child-labor standards by extending the age upward and the hours downward to bear some relationship to the amount of work safely undertaken, increasing the coverage of the legislation to include most occupations and to exclude entirely certain hazardous or unhealthy occupations, relating the labor provisions to minimum educational standards, and employing administrative techniques that will effectively preclude parent-employer circumvention of the law.³⁰

The policy of limiting the hours of work in the interests of higher labor standards has been applied to persons other than children by the declaratory working-day legislation (1847), regulation of hours on public-works projects (1853), women legislation (1863), and legislative regulation of hours on railroads (1892), and in mining (1896). The declaratory working day legislation raised no problem of enforcement, for agreement among the parties automatically operated to make the legislation inapplicable; the law merely provided that in the absence of agreement 10 hours' work constituted the working day. The regulation of hours of work for women, on the other hand, raised difficult problems of enforcement as well as of constitutional law, and consequently spread slowly among the States. By 1896 only 13 States had passed laws, 8 States were added in the period 1896-1908, while the greatest progress seems to have been made in the period 1909-17 when 19 States adopted laws for the first time. However, only 2 States passed laws in the period 1918-32. The more recent tendency is to reinforce the statutory prohibition by effective enforcement devices, extend the coverage of the law, and further raise the labor standards by administrative order.

The hours of work for men were first protected on public work projects, but the policy was slow in getting under way and by the early 1930's had been adopted by only slightly more than half the States. Between 1853 when the first law was passed by New York and 1890 only 4 other States had acted; between 1891 and 1910, 17 additional States passed laws, but then the trend slowed down again, and by 1931 the total number of States was 27. Limitation of hours on railroads was later in getting underway (1892) but rapidly gained momentum, with 18 States acting in the decade of 1901-10, and Congress

²⁸ See H. A. Millis, *Sickness and Insurance* (1937) and the Committee on the Costs of Medical Care, *Medical Care for the American People* (1932).

²⁹ Elizabeth Brandeis, *Labor Legislation* (vol. III of Commons et al., *History of Labor in the United States*, 1935), pp. 403-405.

³⁰ See generally the forthcoming volumes by H. A. Millis and R. Montgomery on *Labor's Progress and Some Basic Problems* and *Labor's Risks and Social Insurance*, parts of which were made available to the author in manuscript form through the courtesy of Robert Burns, research assistant at the University of Chicago.

³⁰ *Ibid.*, p. 406.

passing a law in 1907 which operated largely to supplant State regulation. The limitation of hours in mining came next in 1896 but has been able to make only slow headway. By 1900, 4 States had acted; 8 more were added in the next decade, and 3 in the decade 1911-20, but no further laws appeared to have been passed till the depression of the 1930's. General hour legislation for men has been conspicuously absent.³¹

A frontal attack on adequate labor standards by the setting of minimum wages was even later in coming among the States; but when Massachusetts passed its first law in 1912, its lead was promptly followed in the next year (1913) by 8 States, and by 1920 a total of 15 States had acted. Constitutional issues immediately arising, the wage laws were nullified by 3 State courts and 2 State legislatures before the United States Supreme Court ruled that the setting of minimum wages violated due process of law, a barrier only removed in 1937.³²

Of greater contemporary significance to the working classes than hour and wage standards, which have failed to apply to the vast mass of workers until the immediate present, has been the growth of standards applying to the conditions of work, and to industrial safety and rehabilitation in particular. The rules of the common law, derived from the preindustrial era, constituted one of the greatest grievances of the worker, for they forced him and his family to bear personally the risks attendant upon industrial employment, under the slogans of "assumption of the risk," "fellow servant," and "contributory negligence." These rules, which might have been reasonable in an agrarian and small craft era, were slowly modified by statutes which denied the employer the right to "contract out" of liability to his employees, created the right of legal suit in death cases, and abrogated or modified the specific common-law defences already cited. However, the mere removal of the barrier to legal action in the case of industrial injuries was not sufficient, for it afforded no practical assurance that the workingman or his dependents, after weathering the combat in law offices and court chambers, would substantially collect the economic content of whatever judgment that the courts might eventually render. The United States Labor Department in 1893 called attention to the system of compulsory insurance against industrial accidents that was so prevalent in European countries. No action was taken till 1902 when the State of Maryland provided by law that the employers might exempt themselves from legal liability for industrial accidents by taking out industrial accident insurance. This measure promptly met the ire of the courts, as did a Montana law of 1909 which provided for compulsory compensation for mining accidents. In 1910 New York passed its first workmen's compensation law, but the courts were still not to be reconciled except by express constitutional amendments which was adopted in 1913. Other States appointed investigating committees, 8 in 1910, 12 in 1911, and 7 in 1913.³³ Although judicial opposition remained so strong in other States as well that constitutional amendments had to be secured in 6 of them, the workmen's compensation movement was not measurably slowed down, although the emphasis was definitely thrown to the elective instead of the compulsory type (i. e., the employers could choose to come under the statute or stand on their common-law rights and obligations).³⁴

³¹ *Ibid.*, pp. 457-461, 541, 560-562. Also see U. S. Women's Bureau, Bulletin No. 66.

³² The States passing minimum wage laws in 1913 were California, Colorado, Minnesota, Nebraska, Oregon, Utah, Washington, and Wisconsin; followed in 1915 by Arkansas and Kansas, in 1917 by Arizona, in 1919 by North Dakota and Texas, and in 1923 by South Dakota, culminating the first phase of the movement under the direct onslaught of the U. S. Supreme Court. In *Adkins v. Children's Hospital*, 261 U. S. 525 (1923), and *Morehead v. People*, 298 U. S. 587 (1936), minimum wage laws were declared unconstitutional, but these decisions have apparently been overruled in *West Coast Hotel Co. v. Parrish*, 300 U. S. 379 (1937). In 1933, however, in response to a specific invitation of President Franklin D. Roosevelt, a number of States passed minimum wage laws, as in Connecticut (c. 131a), Illinois (p. 597), New Hampshire (c. 87), New Jersey (c. 152), New York (c. 32), Ohio (p. 502), and Utah (c. 38). Adapted from Millis, *op. cit.*, pp. 306-307, 320.

³³ Brandeis, *op. cit.*, pp. 564-571; *Cunningham v. Northwest Improvement Co.*, 44 Mont. 180 (1911); *Ives v. South Buffalo Ry.*, 201 N. Y. 271 (1911).

³⁴ Also see Wm. F. Dodd, *Administration of Workmen's Compensation* (1936), pp. 35, 823.

The victims of industrial accidents were also assisted by programs of industrial rehabilitation, starting with a Massachusetts act of 1917 which provided for special training facilities. When Congress made Federal aid available to the

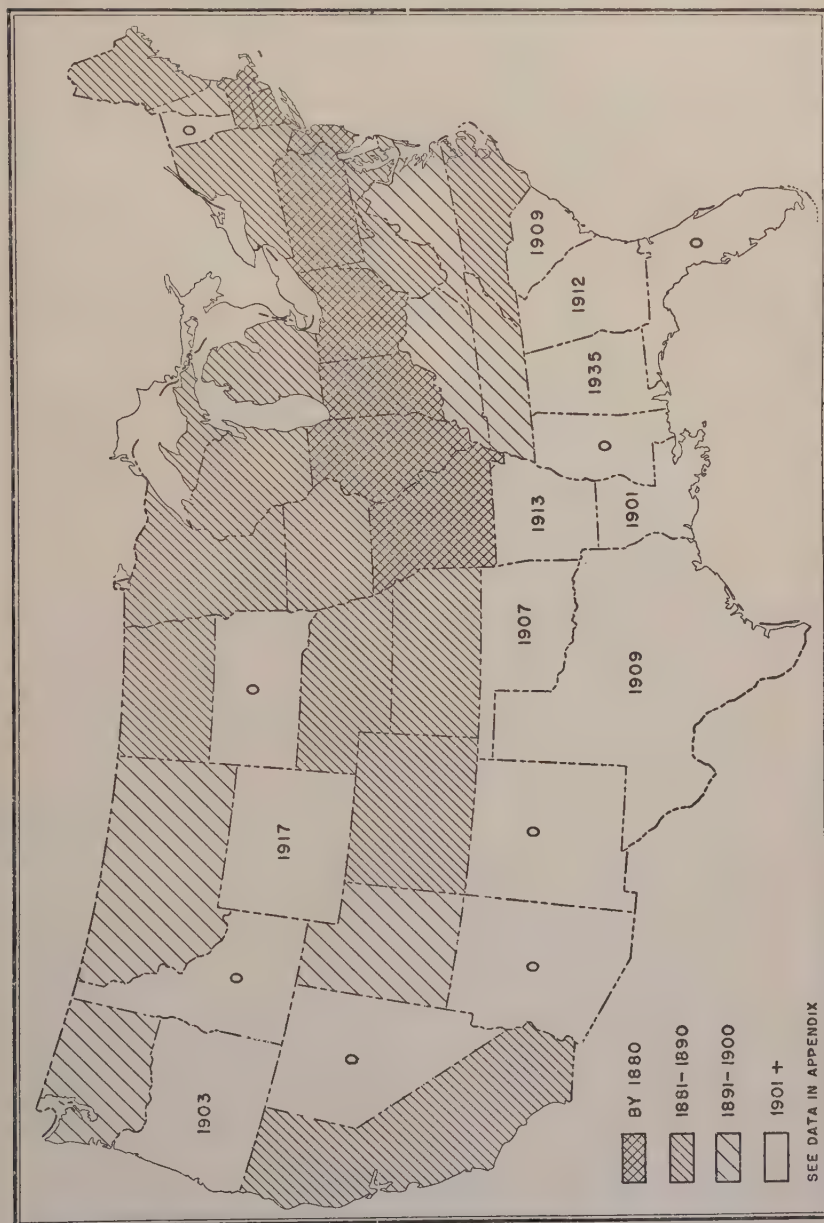


FIGURE 8.—Growth of State Bureau of Labor Statistics

States for this purpose in 1920, 11 other States had also passed rehabilitation laws, and this pattern of State action was rapidly universalized as a result of the Federal grant.³⁵

³⁵ U. S. Office of Education, Vocational Education Bulletin, No. 190.

Workmen's compensation and industrial rehabilitation, however, are designed to make the best of accidents that have already occurred. The States have also taken steps to prevent the occurrence of industrial accidents and to lessen the toll of industrial disease. The need for ventilation and sanitary working conditions was early recognized in mining, special inspectors of which were appointed by the State of Pennsylvania in 1869. In 1877 the State of Massachusetts extended the inspection device to general manufacturing by establishing a system of factory inspectors, authorized to enter industrial premises to ascertain whether the State labor and safety laws were adequately observed. State inspection authorities had been established in approximately half the States by 1900 and are now found in almost all the States. A significant shift in emphasis on industrial safety took place in 1911 when the State of Wisconsin repealed its existing safety laws and substituted the requirement that all manufacturers must provide a safe place of employment, as prescribed by the industrial commission after due investigation of the particular industrial hazards. By 1930 seven States were rated as definitely successful in using administrative orders to promote industrial safety.³⁶

The States have also indicated their concern with the laboring classes and the conditions of work by the establishment of bureaus of labor statistics. The first and probably most representative agency was the Massachusetts bureau which was established in 1869 to—

collect, assort, systematize, and present * * * statistical details relating to commercial, social, educational, and sanitary conditions of the laboring classes and to the permanent prosperity of the productive industry.³⁷

Other States were quick to follow, in fact considerably quicker than in establishing the regulatory system of factory inspectors, for all that was proposed was fact-gathering and research, not regulation. By 1880 bureaus of labor statistics had been established in 8 States; the next decade added 15 more States, but then the movement tended to slacken off, adding 6 States in the decade 1891-1900, and 10 States in the period since 1901. (See fig. 8.) The more recent tendency has been to incorporate the fact-gathering and research functions of the bureaus of labor statistics and the regulatory functions of the factory inspectors into a single State labor department.

The establishment of employment offices represents another attempt of the States to improve laboring conditions by expediting the concurrence of job and man in search of job. The first such office was established by the State of Ohio in 1890, patterned closely after a French model. An elaborate program of State employment offices was inaugurated by Illinois in 1899. By 1910 State employment offices were authorized in 18 States; 10 more States acted in the next decade, but then intervened "the decadence of public employment offices" from 1920 to 1930. By 1933, 36 States were found to have passed legislation authorizing the establishment of a State employment office, but in 12 States no office had recently been in operation. In the remaining 24 States appropriations were usually "ridiculously small" and the offices "sadly lacking in adequate employment facilities." Hostile judicial attitudes also contributed to minimize the effectiveness of State employment work by hampering the regulation of private agencies.³⁸

³⁶ Commons, *op. cit.*, III, pp. 366-370; W. F. Willoughby, *State Activities in Relation to Labor in the United States* (1901), p. 34 et seq.; Wis. *Laws* 1911, c. 485; A. Bromage, *State Government* (1936), p. 480.

³⁷ Mass. *Laws* 1869, c. 102.

³⁸ The chronological growth of State employment office legislation has been as follows: 1890, Ohio; 1895, Montana (repealed 1897); 1896, New York (inactive 1906-14); 1897, Nebraska*; 1899, Illinois and Missouri; 1901, Connecticut, Kansas, West Virginia*, and Wisconsin; 1903, Maryland*; 1905, Michigan and Minnesota; 1906, Massachusetts; 1907, Colorado*; 1908, Oklahoma and Rhode Island; 1909, Indiana; 1913, South Dakota*; 1915, California, Iowa, New Jersey, and Pennsylvania; 1917, Arizona, Arkansas, Georgia*, New Hampshire and Utah*; 1921, Louisiana*, North Carolina, and North Dakota*; 1923, Nevada; 1924, Virginia; 1931, New Mexico* and Vermont; and 1932, Kentucky*. The asterisk indicates that the office was found not to be in operation by Ruth Kellogg in her survey of *Public Employment Offices in the United States* (1933), pp. 15-16. State regulation of private employment agencies has fared ill in a judicial climate worshipping of "freedom of contract." See *Adams v. Tanner*, 244 U. S. 598 (1917), and *Ribnik v. McBride*, 277 U. S. 350 (1927).

Labor standards appeared first in the regulation of the work of persons of certain ages and sex, then safety conditions and the provision of industrial compensation and rehabilitation, and on a very modest scale in connection with the concurrence of job and man in search of job, through the State employment offices, but the problem of hours and wages of the vast mass of the working classes has been largely untouched by the States.

Welfare.—Until the great depression of the 1930's, the responsibility of American Government toward the poor, the dependent, and the handicapped was largely local, in accordance with the tradition of the Elizabethan poor laws.³⁹ The very phrase "public welfare" was unknown in Government parlance until 1917 when the Illinois Reorganization Act employed the term. Likewise, local private philanthropy appears to have been more conscious about welfare organization (particularly in connection with the device of a council of social agencies) than public authorities,⁴⁰ except in very recent years.

The American State first became directly concerned with the people's welfare with the establishment of institutions for the care of special classes of the population, i. e., the insane, the blind, the deaf, and the very poor. In 1773 Virginia opened an institution for the insane; in 1822 Kentucky established an institution for the deaf; in 1837 Ohio, an institution for the blind; in 1847 Massachusetts, an institution for the delinquent and in 1854 an institution for the poor. Professor Breckinridge has pointed out in her *Public Welfare Administration in the United States* that these early State institutions frequently assumed a responsibility that extended far outside the boundaries of the State in which the institution was located by taking care of the defectives of other States. This interstate service of the early welfare institutions was particularly pronounced in the case of the Connecticut and Kentucky institutions for the deaf, to such an extent, in fact, that special land grants were made to these States by the Federal Government. When, however, Miss Dorothea Dix, an American outstanding for her efforts to arouse public concern over the welfare of the handicapped citizens of the State, presented to Congress a "magnificent appeal" for national aid for the care of the insane by making a grant of 10 million acres of the public lands and succeeded in securing the passage of a bill, President Pierce vetoed it as an unconstitutional interference with the purely internal concerns of the States. The fact that similar aid was regularly available for the education of the normal was ignored.⁴¹

With the growth of particular State institutions and the expansion of local welfare functions in the cities, it appeared necessary that some single agency of State-wide jurisdiction be established for the purpose of resolving conflicts between local jurisdictions over responsibility for particular persons, reforming financial procedures (and thus lower the cost of the welfare services) and also obtaining information about welfare needs and services. The first such agency was established by the State of Massachusetts in 1863 to "investigate and supervise the whole system of the public charitable and correctional institutions" and also to compile "all desirable information concerning the industrial and material interests of the Commonwealth." The immediate administrative function of the Massachusetts Board of State Charities was to order the transfer of pauper inmates from one charitable institution or hospital to another.⁴²

³⁹ The Elizabethan law (XLIII, c. 2) divided the poor into (1) the lame, impotent, old, blind, and others unable to work, and (2) the able-bodied poor, "sturdy vagabonds" and "villiant beggars," and (3) poor children. The first group was to be aided by general taxation, the second must work as provided by justices of the peace, church wardens, and appointed householders; while the third was to be bound out as apprentices. See S. P. Breckinridge, *Public Welfare Administration in the United States*, c. 1 (1927).

⁴⁰ See the *Proceedings of the National Conference of Social Work* from 1929 onwards, and Arthur Dunham, "Social Welfare Planning" in *Social Work Yearbook* 1937, pp. 482-487.

⁴¹ *Op cit.*, pp. 14-15. See also Breckenridge, "Institutions, Public," *Encyclopedia of the Social Sciences*, VIII, pp. 90-95.

⁴² *Mass. Laws* 1863, c. 240

A number of other States followed Massachusetts' example, so that by 1870 there had been established a welfare agency in eight States, usually designated the board of State or public charities, to which the word "reform" was added by

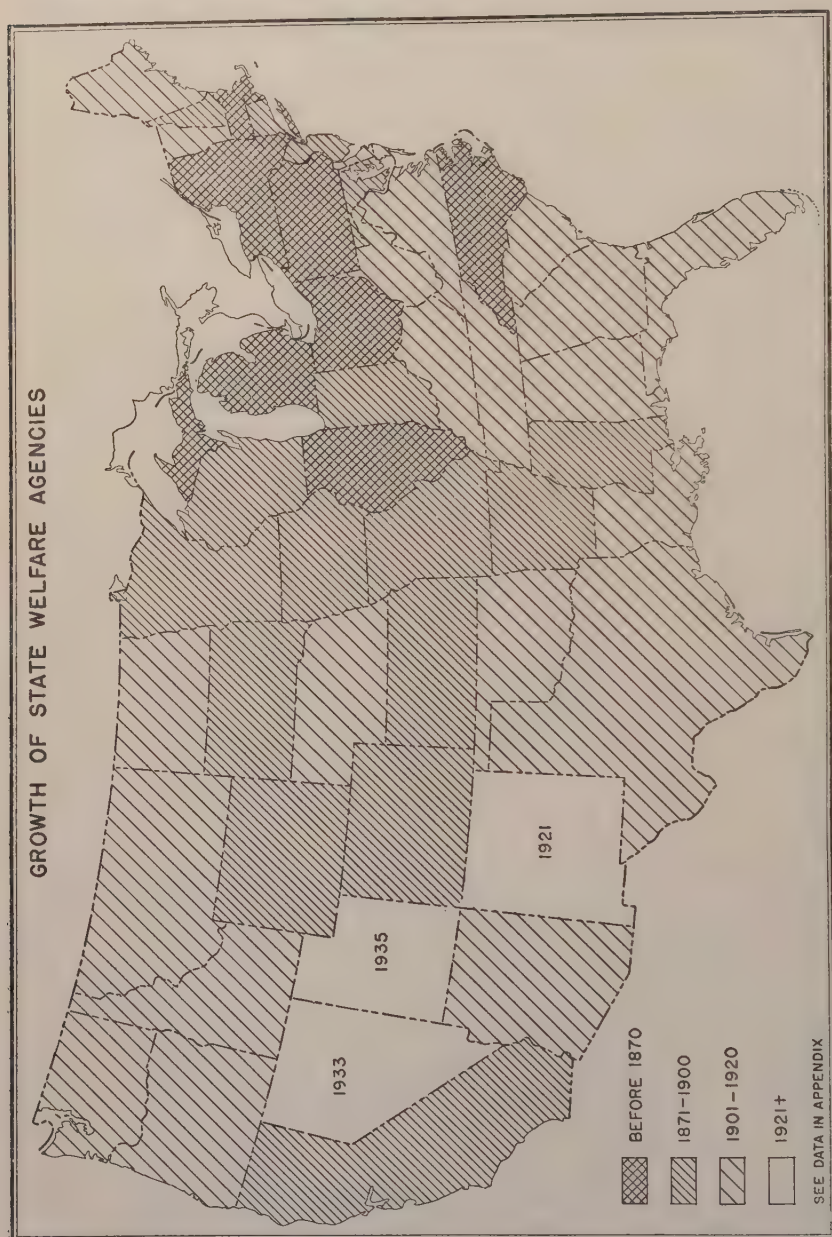


FIGURE 9

Prepared in office of the National Resources Committee

the States of Wisconsin and Michigan in 1871. The financial emphasis in the creation of State welfare agencies is indicated by the name "board of control," transferring fiscal supervision from separate administrative boards of particular

institutions to the new State organization. This development was very slow in getting under way in the rest of the States, after the initial interest. Thus, by 1900 only 15 other States appear to have established a central welfare agency, making a total of 23 States. By 1920 this number had increased to 45, and the remaining 3 States have since established welfare agencies. (See fig. 9.)

The major revolution in State welfare administration came in 1917 when Illinois in its Reorganization Act proposed not only to abandon the old names in favor of "public welfare" but also to scrap the older administrative structure, abolish the board, and substitute a single director of public welfare to control all the welfare functions of the State government. By 1927 Professor Breckinridge noted 11 States that "have ostensibly created departments generally using the name 'public welfare'."⁴³ A counter trend set in during the depression with the creation of a variety of special relief agencies to function independently of the existing governmental organization of welfare. Many of these agencies were designedly temporary in purpose and appear now to be more or less definitely receding from the field in favor of the trend toward the integrated management of the State welfare functions, especially in view of the strong preferences of the Federal administration for responsible State supervision of the local administration of the social-security program.

In addition to the management of welfare institutions the States have begun to assist and stimulate local welfare work by means of the grant-in-aid device. This method of raising the level of local welfare appears to have been first used in connection with mothers' aid (or pensions) which were provided in Illinois and Missouri in 1911, and spread rapidly among the other States, by 1920 having been adopted in 38 States and in all but 2 States at the end of 1932. In their first form these mothers' aid laws were merely permissive (i. e., localities could provide assistance) and quite inadequate in the amount of aid that was available, but the tendency has been toward meeting the needs of the family and increasing the scope of coverage to include more children (reflected in the change in name from "mothers' aid" to "aid for dependent children").⁴⁴ At the same time a number of States appointed special children's commissions to investigate child-welfare conditions, starting with Ohio in 1911 and spreading to 36 other States by 1930. In some States the special commission became a bureau of child welfare, while in other States they secured the enactment of child welfare legislation. The whole course of child welfare has been strongly influenced by the activities of the United States Children's Bureau, its research and consultation facilities, the "Children's Year" of 1919, and the provision of grants-in-aid for maternity and infancy welfare under the Sheppard-Towner Act, which was in effect from 1922 to 1928, and later incorporated in fuller form by the Social Security Act of 1935.⁴⁵

Old-age pensions were much slower in getting under way, despite the fact that a number of States had appointed special investigating commissions in the early

⁴³ Breckinridge, *op. cit.*, p. 557. The "board of public welfare" originated on the municipal level, in Kansas City in 1910. See E. C. Lindeman, "Public Welfare," *Encyclopedia of the Social Sciences*, XII, p. 688.

⁴⁴ The development of legislation providing for mothers' aid and dependent children has been as follows: 1913, California, Colorado, Idaho, Iowa, Massachusetts, Michigan, Minnesota, Nebraska, Nevada, New Hampshire, New Jersey, Ohio, Oregon, Pennsylvania, Utah, South Dakota, Washington, and Wisconsin; 1914, Arizona; 1915, Kansas, Montana, New York, North Dakota, Oklahoma, Tennessee, West Virginia, and Wyoming; 1916, Maryland; 1917, Arkansas, Delaware, Maine, Missouri, Texas, and Vermont; 1918, Virginia; 1919, Connecticut, Florida, and Indiana; 1920, Louisiana; 1923, North Carolina and Rhode Island; 1928, Kentucky and Mississippi; 1931, Alabama and New Mexico. See U. S. Children's Bureau Pub. No. 220 (1931). The mothers' pension movement obtained in part its impetus from the White House Conference on Dependent Children, held in 1909, which strongly criticized the prevailing system of institutional care of children and recommended foster home care and aid to families. See A. J. Davis, "The Evolution of the Institution of Mothers' Pensions in the United States," *Am. Journal of Sociology*, XXXV, p. 573 (1930). Pensions for the blind were first instituted in New York City (*Laws* 1875, c. 404), and approximately half a century before aid to the blind became a matter of State concern, namely in 1898 when Ohio (p. 270) provided for a general pension system. Other States followed, as Illinois in 1903 (p. 138), Wisconsin in 1907 (c. 283), and the 5 States of Iowa, Maine, Missouri, Nebraska, and New Hampshire in 1915. See Harry Best, *The Blind* (1919), p. 365. Legislation authorizing blind assistance is reported by the Federal Emergency Relief Administration to have been adopted in 20 other States. *Monthly Report*, October 1935, pp. 44-45. Blind assistance has been incorporated into the Social Security program.

⁴⁵ See U. S. Children's Bureau Pub. No. 131 (1924) and No. 203 (1931). Also see *Recent Social Trends* (1933), p. 772; and U. S. Social Security Board, *Social Security in America* (1937), pp. 270-271.

part of the present century. As early as 1903 the Massachusetts Bureau of Labor Statistics calculated the cost of installing a system of old-age assistance, and in 1907 the legislature appointed a commission to investigate old-age dependency. Other commissions were appointed by Wisconsin in 1915, by New Jersey, California, and Massachusetts in 1917, and by Ohio and Connecticut in 1919. A distinct trend in favor of State action was inaugurated by the report of the Pennsylvania commission of 1919-21 and followed by the reports of Montana (1922), Nevada and Indiana (1925), Virginia (1926), California (1928), Minnesota and Maine (1929), and New York (1930). But when the States tried to pass legislation for old-age assistance they promptly met with strong judicial opposition which defeated the pioneer attempts of Arizona (1915) and Pennsylvania (1923). As late as 1928 only two States—Montana (1923) and Wisconsin (1925), which had adopted optional laws—were “actually paying pensions” to the aged, while the statutes of four other States were inoperative. Following the open endorsement of the American Federation of Labor in 1929 California adopted a system of mandatory pensions and two Eastern States (Massachusetts and New York), which have long been noted for their pre-eminent position in the welfare field, entered the old-age pension movement, which then rapidly began to gain momentum, adding six States in 1931. With the incorporation of old-age pensions into the social-security program this type of welfare aid has been universalized.⁴⁶

Housing became a matter of State concern with the passage of the New York tenement code of 1867, which forbade cellar dwellings unless the ceiling was at least 1 foot aboveground, and required 1 water closet for every 20 persons and the accessibility to city water in every house or yard.⁴⁷ Tenement codes were adopted by Pennsylvania in 1895, by New Jersey in 1904, by Connecticut in 1905, by Wisconsin in 1907, by California and Indiana in 1909, by Kentucky in 1910, and by other States in later years. The approach of the tenement code however, was by way of restrictive legislation; the codes did not directly contribute to the promotion of good housing.

In 1909, however, the State tried a new approach when Massachusetts established a temporary homestead commission to—

consider whether it would be expedient for the Commonwealth to acquire or open for settlement lands in country districts with a view of aiding honest, industrious, and ambitious families of wage earners to remove thereto from congested tenement districts of the various large cities and towns of the Commonwealth, to the end that such lands may ultimately pass into the possession of the families settling upon them * * * report * * * any plans which it may recommend.⁴⁸

The majority members of the commission reported that the plan to remove city dwellers to rural areas was unfeasible because of high costs. In 1911 Massachusetts established another homestead commission to provide for the establishments of “homesteads for workmen in the suburbs.”⁴⁹

The commission reported in 1913 recommending the establishment of town planning boards⁵⁰ to make housing studies. The town planning boards meet in yearly conferences under the auspices of the Massachusetts Federation of Planning Boards. Meanwhile the justices of the Massachusetts General Court, having been requested to prepare an advisory opinion, declared that housing was not a public use in Massachusetts.⁵¹

⁴⁶ Adapted from Social Security Board, *op. cit.*, pp. 159-160; and from U. S. Bureau of Labor Statistics, *Public Old-Age Pensions in the United States and Foreign Countries* (Bulletin No. 561).

⁴⁷ N. Y. *Laws* 1867, c. 908. The code was a belated recognition of the problems raised by Gerret Forbes in 1834 when his report as city inspector in New York City related the high death rates of certain sections to bad housing conditions, and by Dr. John H. Griscom in 1842 when he pointed out the relationship between overcrowded and unsanitary tenements and the incidence of epidemics. See “Housing”, *Encyclopaedia Britannica*, XI, pp. 841-43.

⁴⁸ Mass. *Laws* 1909, c. 143.

⁴⁹ Mass. *Laws* 1911, c. 607.

⁵⁰ Mass. *Laws* 1913, c. 494.

⁵¹ *Opinion of Justices*, 211 Mass. 624 (1912). A constitutional amendment (art. 47) was adopted in 1917 making shelter a “public function,” at least during wartime and in periods of emergency and stress. The commission filed its first annual report in 1914, summarizing foreign experiences in public housing. Nothing further seems to have been done until the advent of the present period.

In 1913 California established a commission of immigration and housing,⁵² with purposes similar to those of the existing Massachusetts commission, to which references were made in the California reports. In its first report in 1915 the commission was largely concerned with housing and sanitation in labor camps, reported a survey of tenement houses in San Francisco, and concluded with a section on "constructive housing." In 1915 the commission was also given limited concurrent jurisdiction to enforce the State Hotel Act, tenement and dwelling code, particularly in areas where no local control was exercised.⁵³

No other state ventures in the housing field can be reported till the 1930's when both Ohio and Delaware established housing boards, but these incidents are phenomena coming at the close of the period of this study.⁵⁴

Unemployment insurance was last in getting under way. A bill had been introduced in the Massachusetts Legislature in 1916, but the first State unemployment-insurance law derives from the Wisconsin act of 1932. Again, the social-security program had served to universalize a pattern of State activity. The emergency aspects of unemployment began to receive State attention in 1931 when 11 States appropriated money for relief, a problem which rapidly faced all the States as well as the Nation. However, both unemployment insurance and relief are phenomena that come at the very close of the period marking off this study (1933).⁵⁵

⁵² Calif. Laws 1913, c. 318.

⁵³ Calif. Laws 1915, c. 428. In 1927 the name of the commission was changed to that of division of housing and sanitation in the new department of industrial relations (c. 440), but in 1931 the name of the division was changed back to the division of immigration and housing (c. 597). Cf. the discussion of land settlement activities in California, *supra*, with which the housing activities became intimately identified.

⁵⁴ Del. Laws 1933, c. 61; Ohio Laws 1932, p. 78.

⁵⁵ Adapted from Social Security Board, *op. cit.*, pp. 91 et seq. The 11 States were Illinois (Laws 1931, p. 193), Maryland (c. 150), Massachusetts (c. 268), Missouri (p. 205), New Jersey (c. 387), New York (c. 798), Ohio (p. 91), Oklahoma (p. 354), Pennsylvania (No. 7), Rhode Island (c. 1855), and Wisconsin (c. 29).

Part III. COMPREHENSIVE PLANNING TRENDS

Chapter 6. EMERGENCE OF THE TECHNIQUE

SUMMARY

Up to the first decade of the twentieth century the management of resources had developed along specific lines (as separate agencies for land, water, wildlife, forests, etc.), and few or no attempts had been made to interrelate the knowledge and uses of the different resources of the State. The conservation movement markedly affected these dispersed developments by (1) popularizing the democratic significance of governmental responsibility for the management of resources and (2) emphasizing the need for, and the method of, taking a comprehensive view of the management of resources in their multiple interrelationships so as to effectuate the greatest utilization of the total resources of the State. A series of Presidential commissions eloquently expounded the theory of conservation, but the political drama became so engrossed with the question of who was to control the use of resources that the technique question of how to bring about their most effective use faded away from the national scene. More than half the States, however, have been able to incorporate into their organizational framework a new type of administrative agency (commonly called the conservation commission) that facilitates the application of the technique of multiple-use of resources. Shortly prior to 1933 a few States (New York and Wisconsin) experimented with agencies organized for the primary purpose of planning as distinguished from administrative responsibility for the day-to-day management of certain resources, and as such have been definitely acknowledged as clear prototypes of the new planning organizations that have been established in almost all the States in the period since 1933.

With the currency of the idea of the State conservation of resources, the recent trend has been toward the institutional recognition of planning as a permanent function of modern State government (i. e., not merely incidental to the performance of other functions), the expansion of the concept of resources to include both natural and human resources, and the deliberate practice of advisory comprehensive planning as a "technical instrument of democratic government."

Up to the first decade of the present century the management of resources had evolved along very specific lines, as traced in part II of this study. Such institutional agencies of the State government as existed were concerned with the management of land, or wildlife, or forests, etc., as separate and unrelated activities. In a few scattered instances, as in some of the State geological surveys or the internal-improvement programs, there may have been some intermittent recognition of the fact that the use and development of one resource might easily affect other resources and that the most effective utilization of resources would

depend upon interrelating the knowledge and uses of the different resources.¹ But the organization of American State government was not conducive to the development of the technique of "multiple-use" of resources, or of comprehensive planning into which the former usually leads, for the agencies concerned with the management of resources were numerous and legally independent of one another. Nor had the Governor yet emerged as the manager of the State administrative affairs.² In brief, both the idea and practice of comprehensive planning of resources were largely precluded by the very administrative framework of State government.

This structural diffusion of the management of resources has been radically changed in most State governments, at least insofar as the management of natural resources is concerned. A new State agency has emerged in more than half the States to integrate into a single administrative organization the principal powers and controls that the modern State exercises with reference to its natural resources. The name of this organization is generally the "conservation" commission or department. Its widespread development in the State government is one of the principal achievements of the conservation movement, which thus served to bring together under the concept of multiple-use the different streams of ideas and practices for the management of specific resources, that have been traced in part II. The contribution of the conservation movement was twofold: (a) Popular realization of the democratic significance of governmental management of resources in the interests of the entire society (in space and in time) rather than of special groups or interests, and (b) emphasis of the need for, and the method of, taking a comprehensive view of the management of resources in their multiple interrelationships so as to make possible the greatest utilization of the total resources of the State.³

It is not implied that the mere organization of a conservation commission is per se the adoption and practice of the technique of comprehensive planning. In no case will the scope of the activities of the conservation agency be found to be really comprehensive (including the use of all resources, natural and human), nor will its primary function be planning as separated from day-to-day administrative responsibility. The development of State conservation agencies, however, does represent a distinct achievement of American State government in facilitating, in administrative organization, the application of the technique of "multiple-use" of certain resources. A recent report of the New York Department of Conservation has keenly pointed out the significance of this development:

During the years in which various phases of conservation were being publicized and promoted, little public attention was paid to the possibility that any conservation activity, carried on independently, might interfere with or offset some other conservation program * * *. It is important * * * that various conservation interests consult one another before any project is undertaken, to avert, for instance, the creation of deserts for game by too intensive and exclusive reforestation; or the elimination of good farm land by the erection of water-power dams in one place when they could be just as easily placed in another location without flooding productive soil; or the drainage of a marsh for mosquito control or some other purpose which would result in the destruction of a wild-life-breeding area.⁴

This chapter is concerned with indicating the conceptual origin of the technique of "multiple-use" of resources and its expansion into the concept of comprehensive planning. At best, it will be possible only to indicate the State practice of the technique by the extent to which the present organizational framework of the State governments permits or facilitates its adoption and practice in conser-

¹ *Supra*, pp. 39-40, 57.

² L. D. White, *Trends in Public Administration* (1933), pp. 176-179.

³ For a description of the first contribution of "conservation," see Gifford Pinchot, *The Fight for Conservation* (1910). This chapter is primarily concerned with the second contribution of "conservation."

⁴ New York Conservation Department, *Twenty-fifth Annual Report* (1935), pp. 21-22. "Fortunately this problem is less acute in the State of New York than elsewhere because practically all conservation activities here are assembled in this Department and consultation among the chiefs of various activities is already in effect."

vation administration. The chapter will conclude with a description of some recent experimentation with agencies organized for the primary purpose of planning the use of the State resources. This planning agency, which is typified by the New York Commission on Housing and Regional Planning (1923-26) and the Wisconsin Regional Planning organization (1929 onward), differs from the conservation agencies by (a) the freedom from administrative responsibility for the day-to-day management of resources and (b) the comprehensive scope of its activities, theoretically including all the resources of the State. The New York and Wisconsin experiments have been definitely recognized as clear prototypes of the State planning organizations that were established in the period starting in December 1933.

The technique of comprehensive planning of resources has developed out of a background consisting of trends in (a) the management of specific resources (as traced in part II), (b) the multiple-use management of related resources by the conservation agencies, and (c) agencies organized for the primary purpose of planning all the resources of the State.

The chapter is divided into sections on (1) Origin of the Technique of Multiple-Use and Comprehensive Planning of Resources, (2) Origin and Growth of the State Conservation Agencies, and (3) Agencies Organized for the Primary Purpose of Planning.

Origin of the Technique of Multiple-Use and Comprehensive Planning of Resources.—The technique of the multiple-use and comprehensive planning of resources was brilliantly and daringly formulated by a series of special commissions appointed by President Theodore Roosevelt during the last years of his administration.⁵ These Commissions were the Inland Waterways Commission (1907), the National Conservation Commission (1908-9), and the Country Life Commission (1908-9). In addition, there were the Conference of Governors called in May 1908, the Joint Conservation Conference of National and State officials (December 1908), the North American Conservation Conference (1909), and a series of unofficial conservation congresses (1909-11, 1913, 1916), at which the theory and practice of conservation was discussed (with increasing heat).

The immediate occasion for the appointment of a special investigating commission on inland waterways was the failure of the railroads to handle traffic expeditiously, particularly the shipment of agricultural products in the Mississippi Valley, which had led to the request of a Presidential survey by several commercial organizations. On March 14, 1907, President Theodore Roosevelt requested nine men to serve on an Inland Waterways Commission to "prepare and report a comprehensive plan for the improvement and control of the river systems of the United States." The Chairman was Theodore E. Burton, and other members of the Commission included Senators Francis Newlands and William Warner, the Honorable John H. Bankhead and H. K. Smith, General Alexander MacKenzie of the War Department and Messrs. Gifford Pinchot, W. J. McGee, and W. F. Newell of the Departments of Agriculture and the Interior.

The Commission liberally construed its mandate to "prepare and report a comprehensive plan for the improvement and control of the river systems" by not confining the inquiry to the ways and means of providing river transport, as the immediate occasion might have easily prompted, but by boldly proposing to explore and develop the potentialities of a new and challenging way

⁵ Already as governor of New York, Theodore Roosevelt had been interested in conservation. His first message to Congress in 1901 outlined the vital needs of forest, game, and water conservation. His subsequent messages added the land problem and the revision of the homestead laws (1902), river development (1905), minerals (1907), and national parks (1908). In his 1907 message he stated that conservation was a fundamental problem "that can be handled only through a well conceived plan." See *National Edition of Roosevelt's Works*, XV, pp. 102-09, 161-62, 314-16, 443-52, 525. All his messages have been examined, but these references are to his original statements rather than reiterations of earlier positions.

of looking at the national resources—as an interrelated whole. The most effective use of the resources of a watershed depended upon bringing together the plans for navigation, water purification, power development, control of floods, forest growth, and soil protection into a program of coordinated river development.

As its activities progressed the Commission became strikingly impressed with the manifold ways in which water problems cut across State and departmental lines. The conviction grew that perhaps much of the difficulty besetting actualities of comprehensive river planning might be smoothed out through a Nation-wide conference of Federal and State officials for the exchange of points of view and experience, and it so recommended in a letter to the President on October 3, 1907.

In his formal invitation to the Governors of the States on November 13, President Roosevelt wrote:

The gravity of the situation must, I believe, appeal with special force to the Governors of the States, because of their close relations to the people and the responsibility for the welfare of their communities.

All but 11 Governors,⁶ Members of the Supreme Court and Congress, and 3 special guests (William Jennings Bryan, Andrew Carnegie, and John Mitchell), were in personal attendance at the conference when it convened in Washington, May 13–15, 1908, to listen to the welcoming address of the President of the United States. Despite its common-sense obviousness, this was the first time in American history that any President had actually proposed to confer with the chief executives of the States of the Union upon some common problem confronting the Nation and the States. In this case, it was the imminent problem of the conservation of resources.

The Governors were reminded how the historic conference of State representatives at Annapolis in 1786, meeting in Philadelphia the following year, had been “in its original conception merely a waterways conference, but when they had closed their deliberation the outcome was the Constitution which made the States into a Nation.” The President hurried to add that although the problem of the conservation of our natural resources was “the gravest problem of today,” it was—

but part of another and greater problem to which this Nation is not yet awake, but to which it will awake in time and with which it must hereafter grapple if it is to live—the problem of national efficiency, the patriotic duty of insuring the safety and continuance of the Nation.

The necessity of a “coherent plan” arose out of the fact that all these various uses of our natural resources are so closely connected that uncoordinated treatment of them in “haphazard and piecemeal fashion” brought only further waste. Secretary Elihu Root hailed the occasion as “marking a new departure, the beginning of an era in which the States of the Union will exercise their reserved sovereign powers upon a higher plane.”⁷ This dramatic assembling of the Governors of the States in the National Capital thus served to usher in upon the focus of Nation-wide attention the problems of conservation and, incidentally, to create the annual device of a governors’ conference.⁸

Within a month after the adjournment of the governors’ conference, President Roosevelt appointed, on June 8, 1908, a National Conservation Commission under the chairmanship of Gifford Pinchot, with a total membership of 48,

⁶ The absent States were California, Florida, Georgia, Iowa, Maine, Maryland, Massachusetts, Nevada, Oklahoma, Oregon, and Tennessee.

⁷ But no doubt could be entertained as to the overshadowing dominance of the President, which led many to charge that the device of a house of governors was a “scheme further to thwart the will of Congress.” *Ibid.*, p. 56.

⁸ Subsequent sessions of the governors’ conference touched on the conservation question in 1909–10, 1922, 1924, and 1931, but at no meeting, with the possible exception of the 1909 session, did conservation attract such vast attention. The device of annual governors’ conferences has not notably borne out the original aspirations. Cf. W. B. Graves, *Uniform State Action* (1934), c. V.

including Senators and Congressmen, civil servants, and distinguished citizens.⁹ In its organization, the new Commission singled out water, forests, land, and minerals for particular investigation by dividing itself into corresponding sections with a secretary at the head, drawn from the civil service. After collecting a mass of data which in scattered form was already available in the various Federal Departments and independent establishments, the Commission reported in February 1909.

In transmitting this report to the Congress, President Roosevelt characterized it as "one of the most fundamentally important documents ever laid before the American people. It contains the first inventory of its natural resources ever made by a nation." The report of the Commission, along with its "accompanying papers" in two volumes,¹⁰ was designed to lay "irrefutable proof" before the Nation that conservation was the fundamental question of the day. Conservation was not a question in a partisan sense, the President made clear, but one upon which "men of all parties and all shades of opinion may be united for the common good." Coordinated waterways development was again recommended to the Nation, to which were added forest protection (and tax revision) and mineral and land conservation.

In the report itself the Commission noted three stages in the development of conservation practices by the Government: (1) "Individual enterprise for personal and family benefit" which "led to the conquest of the wilderness"; (2) "collective enterprise, either for the benefit of communities or for the profit of individuals" which led "too often to the growth of great monopolies"; and (3) collective and largely cooperative enterprise "directed toward the larger benefits of communities, States, and the people generally." In passing through these stages, resources "received little thought" in the first, "were wastefully used" in the second, while "in the stage which we are entering wise and beneficial uses are essential, and the checking of waste is absolutely demanded."¹¹

Waste of resources, according to the Commission, was twofold in character, misuse or nonuse. "The most reprehensible waste is that of destruction, as in forest fires, uncontrolled flow of gas and oil, soil wash, and abandonment of coal in the mines." In order to prevent waste there must be both "increase and diffusion of knowledge, from which is sure to result an aroused public sentiment demanding prevention." While the Divisions of the Commission were confined to the natural resources of water, forests, land, and minerals, it is clear that the members were not unmindful of the human resources. Thus the report pointed out:

⁹ *Personnel of the National Conservation Commission.*—The Water Section consisted of Theodore E. Burton, Ohio, Chairman; Francis G. Newlands, Nevada; Jonathan P. Dolliver, Iowa; William Warner, Missouri; John H. Bankhead, Alabama; W. J. McGee, Bureau of Soils, Secretary; Gifford Pinchot, Forest Service; Herbert Knox Smith, Bureau of Corporations; Joseph E. Ransdell, Louisiana; G. F. Swain, Massachusetts Institute of Technology; W. L. Marshall, brigadier general, U. S. Army, Chief of Engineers; F. H. Newell, Reclamation Service. The Forest Section consisted of Reed Smoot, Utah, Chairman; Albert J. Beveridge, Indiana; Charles F. Scott, Kansas; Champ Clark, Missouri; J. B. White, Missouri; Henry S. Graves, Yale Forest School; William Irvine, Wisconsin; Newton C. Blanchard, Louisiana; Charles L. Pack, New Jersey; Irving Fisher, Connecticut; Gustav H. Schwab, New York; Overton W. Price, Forest Service, Secretary. The Lands Section consisted of Knute Nelson, Minnesota, Chairman; Francis E. Warren, Wyoming; Swagar Sherley, Kentucky; Herbert Parsons, New York; N. D. Broward, Florida; James J. Hill, Minnesota; George C. Pardee, California; Charles MacDonald, New York; Murdo Mackenzie, Colorado; T. C. Chamberlin, University of Chicago; Frank C. Goudy, Colorado; George W. Woodruff, Interior Department, Secretary. The Minerals Section consisted of John Daizell, Pennsylvania, Chairman; Joseph M. Dixon, Montana; Frank P. Flint, California; Lee S. Overman, North Carolina; Philo Hall, South Dakota; James L. Slayden, Texas; Andrew Carnegie, New York; Charles R. Van Hise, Wisconsin; John Mitchell, Illinois; John Hayes Hammond, Massachusetts; I. C. White, West Virginia; J. A. Holmes, Geological Survey, Secretary. The Executive Committee: Gifford Pinchot, Chairman; Theodore E. Burton; Reed Smoot; Knute Nelson; John Daizell; Joseph A. Holmes; W. J. McGee; Overton W. Price; G. W. Woodruff; Secretary of the Commission, Thomas R. Shipp (elected by the executive committee). *National Conservation Commission*, 60th Cong., 2d sess., S. Doc. 676, l. pp. 116-117.

¹⁰ The two volumes of appendices discussed Future Estimated population [continued increase], rainfall distribution, water transportation, growth of internal and foreign commerce, irrigation, underground waters, floods, land, minerals, national vitality, etc.

¹¹ Cf. McGee's statement at the 1909 session of the National Conservation Congress: "When the Federal Constitution was formed, land alone was recognized as a resource and as a basis of national existence. Not until within the last century were minerals so recognized, and even yet they are imperfectly dis severed from the soil above them. Not until within a generation were forests regarded as a resource to be treated separately from the soil, and even yet they are not generally separated in taxation. Not until within a decade were the waters recognized as a resource to be developed and conserved in the interest of the people. And in only a few centers is human life recognized even today as a factor in the welfare of the State." *Proceedings*, p. 99.

Even as we have neglected our natural resources, so we have been thoughtless of life and health. Too long have we overlooked that grandest of our resources, human life. Natural resources are of no avail without men and women to develop them, and only a strong and sound citizenship can make a nation permanently great. We cannot too soon enter on the duty of conserving our chief source of strength by the prevention of disease and the prolongation of life.

More complete inventories of resources were necessary than those presented in the three-volume report of the Commission. Without the active cooperation of the States and Nation little permanent achievement would be likely to result. Therefore there should be established a permanent "organization through which all agencies—State, National, municipal, associate, and individual—may unite in a common effort to conserve the foundations of our prosperity."

Precisely to provide the foundation of such cooperative effort and to acquaint the public with the findings of the National Conservation Commission, a call was issued toward the end of 1908 for a Joint Conservation Conference, to be held in Washington, December 8-10, 1908. Conservation agencies of 26 States were represented, 18 Governors were there in person, and 10 others by representatives. While thus fewer Governors attended than at the May conference, which was to be expected in view of the fact that the earlier meeting was specifically a Governors' conference, it is interesting to note that 8 out of the 11 States which had failed to send their Governors or representatives to the spring meeting now found it advisable to be represented.¹²

In expounding the concept of the "comprehensive plan," President Theodore Roosevelt realistically warned his audience that acting on that principle was "a great deal harder" than applauding it because—

The special interests include not merely and not principally interests of special individuals but interests of special localities; and any one of you who do not know what it is to try to get through a scheme for the general good that seems not to pay heed to the interests of a special locality have an eye-opening experience before you; and that whether you are engaged in trying to improve the right rivers without wasting your money in improving unnavigable creeks, or whether you are trying to get proper navy yards properly supported instead of having money wasted on navy yards which have the one defect of being wholly useless. * * * If you dissipate the improvements throughout the country on the ground that each congressional district shall have its share, you had better abandon the project from the beginning. I want you to have a comprehensive plan formulated by a national commission, because I want to see that plan genuinely national in scope:

The conference adopted resolutions endorsing the work of the National Conservation Commission and advocating the practice of the principle of the inter-related uses of water, the protection of human life and health, and the creation and continuance of State conservation commissions.

The President went on to prove his assertion that the United States was taking "the lead among the nations of the world" by calling a North American Conservation Conference which convened the following February, with delegates from Canada, Mexico, and Newfoundland. It, in turn, recommended the calling of a world conservation conference at The Hague, but this came to naught with Roosevelt's retirement from the Presidency and departure on his African adventure.

In a letter to Prof. L. H. Bailey of the New York Agricultural College, on August 10, 1908, President Theodore Roosevelt called attention to the fact that

¹² Governors of Arizona, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Kansas, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, New Mexico, North Dakota, Oregon, and South Carolina. Special representatives of California, Colorado, Maine, Missouri, Nevada, New Hampshire, New York, Virginia, Wisconsin, and Wyoming.

State conservation commissions of Alabama, California, Colorado, Delaware, Florida, Georgia, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Nebraska, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Virginia, West Virginia; and forestry agencies of Michigan and Ohio; the waterways commission of Missouri; and a proposed agency of Kentucky.

On the other hand, four States (Idaho, North Carolina, Vermont, and Washington) which had been represented at the Governors' Conference failed to send any representative whatever. The three States failing to respond to either conference were Tennessee, Oklahoma, and Iowa. The special guest was Andrew Carnegie; Social and Political Science Academy sent Profs. Emory Johnson and M. Lindsay.

the "social and economic institutions of the open country are not keeping pace with the development of the Nation as a whole" and requested the services of Professor Bailey as chairman of a proposed Country Life Commission to inquire into the "main deficiencies of rural life." Other members of the Commission included Henry Wallace (of *Wallace's Farmer*), K. L. Butterfield (president of the Massachusetts Agricultural College at Amherst), Gifford Pinchot, Walter H. Page (editor of *World's Work*), C. S. Barrett (of Georgia) and William A. Beard (of California).

The Commission conducted hearings at 30 different places, engaged in extensive correspondence and sent out more than half a million questionnaires, of which 115,000 were returned. Following a special suggestion of the President, local meetings were held in schoolhouses in most States. The States of Nebraska and Missouri officially designated special days for country-life discussions, and the four States of Washington, Oregon, Montana, and Idaho held a regional meeting.

The rural problem was analyzed in terms of the lack of knowledge, training, and leadership, handicaps imposed by the established business systems, lack of highway facilities, continuing and widespread depletion of the soils, absence of agricultural credit, inadequate supervision of public health, shortage of labor, and the burdens borne by the farm women. A "square deal" was proposed for rural society, including nationalization of extension work, the provision of education and highways under the "expert supervision and direction" of a "national plan" of Federal aid, and a general program of "social cohesion." Basically, the Commission stated, "The great rural interests are human interests, and good crops are of little value to the farmer unless they open the door to a good kind of life on the farm."¹³

The origin of the technique of multiple-use and comprehensive planning of resources was thus national in character; but the political drama of the conservation battle over who was to control the use of resources completely overshadowed in the national scene the technical problem of how to bring about the most effective use of resources.¹⁴ The States, on the other hand, as will be shown in the following section, were able to a limited extent to incorporate the technique of multiple-use management of resources into the framework of State government, at least insofar as natural resources are concerned. Moreover in the very recent period, as shown in the concluding section of this chapter, some of the States began to experiment with the organization of agencies for the primary purpose of comprehensive planning.

State Conservation Agencies, Origin and Growth.—At its spring meeting at the White House in 1908, the Governors' Conference had declared its "firm conviction" that the conservation problem was of such "transcendent importance," that it should receive "unremittingly the attention of the Nation, the States, and the people in earnest cooperation." It was recommended to the States that they appoint a "commission on the conservation of natural resources, to cooperate with each other and with any similar commission of the Federal Government."

When there was occasion to reassemble in Washington half a year later, in December, as a Joint Conservation Conference, 23 States reported representatives of an agency described as the "State conservation commission," of more or

¹³ The device of national country life conferences did not appear till after the World War, the first being held in 1919. The title of the 1934 conference was "National Planning and Rural Life."

¹⁴ See Gifford Pinchot, *The Fight for Conservation* (1910). Congress passed the Tawney amendment (35 Stat. 1027) which forbade the use of special commissions unless authorized by law. As a result President Taft ordered the dismemberment of the National Conservation Commission. For the subsequent conservation battle, see R. M. Stahl, *The Ballinger-Pinchot Controversy* (1926). On the other hand, the Federal Government passed a considerable number of specific conservation statutes, authorizing presidential withdrawal of land from entry (36 Stat. 847), providing for lease of waterpower sites (36 Stat. 593) and mineral lands (38 Stat. 741 and 41 Stat. 438), and granting Federal aid for State forestry (36 Stat. 961), agricultural extension (38 Stat. 372), and highways (39 Stat. 355).

less official standing. All but one so far owed its existence to gubernatorial action, but other States were shortly to follow the Louisiana precedent of establishing a conservation commission on firm legislative foundation, as was done by Iowa, New Mexico, Oregon, and Utah within the following year.¹⁵

Other States were represented by their Governors, special delegates, or officials with various types of interest in the conservation problem. Several of the States which had failed to be represented at the Governors' Conference of the preceding spring were in attendance at the December conference. Thus, California, Florida, Georgia, Maryland, Massachusetts, and Oregon were represented by conservation commissions, and Maine, Nevada, and Tennessee were represented in some other form. On the other hand, the five States of Idaho, Montana, North Carolina, New Hampshire, and Washington which had attended the Governors' Conference failed to send any representative to the December meeting.¹⁶

The States had little to report. They had come to Washington to find out the content and methods of conservation and in particular to familiarize themselves with the findings and recommendations of the National Conservation Commission and be advised on how they could best prepare (and safeguard the interests of) their States for participating in the pending conservation move.

The conference reaffirmed the advantages of governmental cooperation and reiterated the recommendation that both Congress and the State legislatures "enact such laws as may be necessary to extend and apply such cooperation in all matters pertaining to the use and conservation of our resources." The conference strongly favored "the maintenance of conservation commissions in every State, to the end that each Commonwealth may be aided and guided in making the best use of these abundant resources with which it has been blessed."

In order to provide a permanent working relationship between the Federal Government and the States, it was recommended that some Federal agency (as the National Conservation Commission) should be authorized by Congress, and provided with ample funds to "cooperate with State commissions, to the end that every sovereign Commonwealth and every section of the country may obtain the high degree of prosperity and the sureness of perpetuity naturally arising in the abundant resources, and the vigor, intelligence, and patriotism of our people."

To counter charges of Federal domination, the conference proposed to implement the emerging Federal-State program of conservation through the good offices of a joint committee consisting of six members of State conservation commissions and three members of the National Conservation Commission. Its assigned purpose should be to prepare and present to the State and national commissions, "and through them to the Governors and the President, a plan for united action by all organizations concerned with the conservation of natural resources."¹⁷

The scene was auspiciously set, but the Federal efforts collapsed in a maelstrom of political controversy. Several of the States, however, under the initial momentum given from the center, had enacted legislation putting their conservation commissions on a more or less permanent foundation, and in one particular case (California) implemented it with liberal appropriations (\$100,000).

Candid recognition of the creative effort of the Federal Government clearly appears from the preamble of the Louisiana law of 1908—the first State con-

¹⁵ See the accompanying table, p. 93. By the end of 1913 this list included in addition the States of California, Nebraska, New York, Rhode Island, Vermont, and Wisconsin.

¹⁶ The New England Governors had held a conference in Boston, November 23-24, 1908, to discuss tree planting, protection of sea food, and the regulation of automobiles on the highways. "We form here no irresponsible House of Governors," *Proceedings*, p. 9.

¹⁷ Aside from casual mention in the early proceedings of the National Conservation Congresses, no further evidence of the activities of this interesting device has been found.

servation commission to be established by a legislature and one which has persisted in its essential form up to the present time. The preamble states:

Whereas the recent conference of governors, in the White House declared their firm conviction that the conservation of natural resources is a subject of transcendent importance; that these resources include the waters, the forests, the land, and minerals; that the Nation, the State, and the people should cooperate in conservation, and,

Whereas the conference declared that this cooperation should find expression in suitable action by the Congress within the limits of, and coextensive with, the national jurisdiction of the subjects, and, complementary thereto, by the legislature of the several States within the limits of and coextensive with, their jurisdiction, and,

Whereas the conference recommended the appointment by each State of a commission on the Conservation of Natural Resources, to cooperate with each other and with any similar commission of the Federal Government, therefore.¹⁸

Perhaps the most comprehensive legislative definitions of what State conservation was intended to embrace at this early stage are to be found in the Iowa and Rhode Island acts. Iowa defined the duty of its commission as that of investigating the interrelationships of the State's waters, forest, soils, and minerals, under the following specifications:

ART. 1. The present condition of public drainage in Iowa and the benefits which can be derived by securing the best of drainage engineering practice, the most economical administration of drainage projects, and a more economical method of financing at lower rates of interest, and show methods by which all of these benefits may be secured.

ART. 2. The present condition of all overflow of flood-plain lands of Iowa, showing losses due by floods in the destruction of farm crops, the losses due by the destruction of property, in the cities, towns, and built-up districts, the losses due by the withdrawal from crop cultivation of such flooded lands, and recommending the proper methods of prevention of such flood conditions.

ART. 3. The survey of at least one representative Iowa river to ascertain the available dam sites and the potential water power and report the best method of procedure to bring about development of the water powers of the State, at the same time retaining the ultimate control of the water supply as a property of the State.

ART. 4. To cooperate with the United States survey provided by act of congress and investigate the possibilities of navigation upon the rivers or upon adjoining lands by canal, and to secure the aid of Government experts when practicable in the several matters investigated by this commission.

ART. 5. The question of forests, and their preservation and their culture in the State, and especially with reference to the influence of forests upon the flood conditions of the rivers and the erosion and waste of the soils.

ART. 6. It is the clear intent and purpose of this bill that the close inter-relation of the several phases of river development shall be shown, and the necessity for a broad comprehensive treatment of our rivers shall be studied and reported upon.

ART. 7. The general question of the relation of the State to the preservation of the fertility of the Iowa soils.

ART. 8. The general question of the wise and conservative development and use of the mineral resources of the State, especially with reference to the mining of coals.

ART. 9. And the general question of the nature and condition of such lakes in Iowa as now belong to the State, the relation of lakes and streams to the preservation of such varieties of fish, birds, and native animals as are desirable and the preservation of the peat beds which now belong to the State.¹⁹

The Rhode Island act in transferring the natural resources survey, which had been established in 1909, from the commissioner of industrial statistics to the new conservation commission (of which the former was chairman) defined the major task of the new agency as including the preparation of—

* * * a census of the idle and unproductive farm properties and other lands in the State, including so-called "abandoned farms," sprout land, swampland, waste land, marshes, meadows, rocky, stony, hilly, and barren land, and embracing all territory of the State that is unimproved, unworked, or at present yielding no returns or products of commercial value whatever, the character of the present growth thereon or the nature of topographical formation. Such census shall show the area, location, ownership, and assessed value of each of such properties, the character, dimensions, and conditions of any buildings or other improvements thereon located, the nature of existing vegetation, the proportionate area suitable for woodland, pasture land and tillage, the topography, drainage, and general slope, the locations and flow of wells, springs, streams, and other sources of water supply, the acreage of sprout land, with age and kind of growth, the acreage of timber, and

¹⁸ La. Laws 1908, No. 144. In 1921 the conservation department was made a constitutional office (VI, 1).

¹⁹ Iowa Laws 1909, c. 249, sec. 2.

the character of the soil, whether gravel, sand, clay, or loam, and whether said properties are for sale or can be leased for purposes of production or development of their resources; the facilities and means for transportation, the liability to frost, the condition of roads and other approaches, the distance from markets or commercial centers, and authentic information, based upon a scientific analysis of the soil, rocks, or other components, as the purposes for which such lands can be most profitably utilized.²⁰

The specific subject entries in the accompanying table on "State conservation legislation, 1908-13" are self-explanatory in most instances. The legislative definition of the specific scope of inquiry usually adopted the fourfold classification of lands, forests, water, and minerals that was originally employed by the National Conservation Commission. In two or three instances the legislature merely made a general authorization to investigate or survey "natural resources," without further itemization, as in the case of Oregon and Wisconsin. The Wisconsin act required its commission "to consider the natural resources of the State of Wisconsin with reference to their remaining unimpaired so far as this is practicable."²¹

Most of these new State agencies were concerned with natural, not human, resources. In striking contrast, the State of Nebraska provided for a "conservation and public welfare commission" to—

* * * act in an advisory capacity in correlating the work of the various State surveys, and other statistical departments of the State and to use the data furnished by these surveys in securing the greatest development of the resources of the State of Nebraska and the highest economic and social welfare of its citizens * * *. To make plans, based on conclusions from these facts and execute such plans for the purpose of developing the resources of the State and improving the welfare of its inhabitants.²²

Table 1.—State Conservation Commission Legislation, 1908-13

States	General survey	Federal cooperation	Resources							Legal citation
			Land	Forests	Water	Power	Minerals	Wild-life	Human	
California.....	x	x	x	x	x	x	x	.....	.....	1911, c. 408.
Iowa.....	x	x	x	x	x	x	x	x	.....	1909, c. 249.
Kansas.....	x	x	.....	.....	.....	.....	.....	.....	.....	1911, c. 302.
Louisiana.....	.....	x	.....	x	x	.....	x	.....	.....	1908, No. 144.
Nebraska.....	x	x	x	.....	.....	.....	x	.....	x	1913, c. 248.
New Mexico..	x	x	x	.....	x	.....	x	x	.....	1909, c. 111.
New York.....	.....	.....	x	x	x	x	.....	x	.....	1911, c. 647.
Oregon.....	x	x	.....	.....	.....	.....	.....	.....	.....	1909, c. 81.
Rhode Island..	x	x	x	.....	.....	.....	.....	.....	.....	1910, c. 644.
Utah.....	.....	x	.....	x	x	.....	.....	.....	.....	1909, c. 103.
Vermont.....	x	.....	x	x	.....	x	.....	.....	.....	1910, No. 479.
Wisconsin.....	x	.....	.....	.....	.....	.....	.....	.....	.....	1911, c. 644.

NOTE.—Session laws for all the 48 States were examined for the period 1908-13, but no other laws were found. Michigan, however, established a Public Domain Commission in 1911 (No. 280) with functions somewhat similar to the State Conservation Commissions.

The Oregon act declared that the conservation commission was created "for the purpose of ascertaining and making known the natural resources of the State of Oregon, and for cooperating with the National Conservation Commission to the end that the natural resources of the State may be conserved and put to the highest use."²³ Other States specified the United States Geological Survey, the Department of Agriculture, and the Forest Service. Cooperation on the same levels of government, i. e., between the States, was contemplated by the Rhode

²⁰ R. I. Laws 1909, c. 438; 1910, c. 644, sec. 4. Kansas employed the phrase "the duty of exploiting the resources." Laws 1911, c. 302.

²¹ Wisc. Laws 1911, c. 644, sec. 1. Cf. the New York constitutional provision in art. VII, sec. 7, discussed *infra*, pp. 28-29.

²² Nebr. Laws 1913, c. 248, sec. 4.

²³ Oreg. Laws 1909, c. 81.

Island and Utah acts. "This cooperation movement constitutes the first great step for cooperation among the States and of the States with the Nation."²⁴ Perhaps the most comprehensive direction for sharing the findings and experiences of other agencies, governmental and private, is found in the California act which provided for the examination of Federal, State, and foreign legislation, "reports and recommendations of persons, officials, commissions, societies, and associations upon the subjects of forestry, water, the use of water, water power, electricity, electrical and other powers, mines and mining, mineral and open lands, dredging, reclamation and irrigation."²⁵

Other features of the acts, which do not appear from the accompanying table, included a strongly worded section in the California act authorizing agents of the commission to enter private property for surveying and measuring water and land areas, enforceable by regular penal sanctions; experimentation with reforestation by the Louisiana commission; the establishment of a "Resources Museum" by the New Mexico (territorial) commission; and specific authorization of the Utah commission to collect and publish "statistics and data relative to the natural resources of the State."

The structural pattern of the new conservation agencies was that of a board upon which ex officio or university representation was conspicuously heavy.²⁶ In cases where citizen members were eligible it was provided that no compensation would be paid other than reimbursement for actual expenses,²⁷ as traveling to national conferences called by the Federal Government.²⁸

Small appropriations were authorized in Louisiana (\$900, for the annual salary of the secretary of the board), Oregon (\$1,000), Wisconsin (\$1,000), and Utah (\$3,000 per annum). California outdistanced all others by appropriating \$100,000 and engaging Louis Glavis as its secretary, following his dismissal from the Federal service in connection with the Pinchot-Ballinger controversy. More than half of the money actually expended during the first 18 months of the existence of the California commission (to wit, \$30,000 out of \$54,760) was used for cooperative work with the Geological Survey and the Department of Agriculture on irrigation problems.

The first tangible accomplishment of the State conservation commissions was the preparation and publication of reports. These have been analyzed in the accompanying table on "Scope of activities of the State conservation commissions, 1909-13." The first reports naturally were very general, usually following a rambling essay style, and frequently quite inspirational in tone. Quite exceptional was the California report of which the following is a tabular outline:

Discussion of natural resources.

Water and water rights.

Forestry.

School land investigation and data.

Mineral lands.

Fish and game.

Lake Tahoe.

Wasting of arterial waters.

Irrigation lands in California.

Irrigation staff reports (in cooperation with the Federal Government).

Exhibits (ownership of forest lands; forest taxation by counties, etc.).

²⁴ Oregon Conservation Commission, Report, 1908, p. 7.

²⁵ Calif. Laws 1911, c. 408, sec. 3.

²⁶ The Rhode Island act provided for a completely ex officio board consisting of the commissioner of industrial statistics, the director of the State agricultural experiment station, the secretary of the board of agriculture, the commissioner of forestry, and the secretary of the metropolitan park commission. Louisiana provided that the professor of horticulture at the State University and the State engineer should serve ex officio in addition to five other members to be selected by the Governor. Laws 1910, c. 644.

²⁷ Wis. Laws 1911, c. 644. Vermont forbade even expenses. Laws 1909, No. 479.

²⁸ Utah Laws 1909, c. 103, sec. 4.

Few measured up to this standard, and some reports could not be considered a comprehensive survey of the State resources in any sense.²⁹ These shortcomings were obviously due in large part to the lack or inadequacy of appropriations. Unlike the present State planning boards, no financial assistance was available from the Federal Government to supplement State fiscal support.

Table 2.—Scope of activities of the Roosevelt State Conservation commissions as indicated by reports, 1909-14

States	Land	Water	Power	Forests	Minerals	Wildlife	Drainage irrigation reclamation	Roads	Taxation	Health and welfare	Other	Date of report
California.....	x	x	.....	x	x	x	x	.....	x	.....	.....	1911
Colorado.....	x	x	.....	x	x	x	.....	.....	.....	.....	.....	1910
Illinois.....	x	x	.....	x	x	.....	x	.....	.....	x	Technical and scientific work.....	1909
Iowa.....	x	x	x	x	.....	.....	x	.....	.....	.....	.....	1911
Louisiana.....	x	x	.....	x	x	.....	.....	.....	.....	.....	.....	1910
Maryland.....	x	x	.....	x	.....	x	x	x	.....	x	Scenery.....	1909
Montana.....	x	x	.....	x	.....	.....	.....	.....	.....	.....	.....	1911
New Jersey.....	x	x	.....	x	x	x	.....	.....	.....	.....	.....	1908
New Mexico.....	.....	.....	.....	.....	x	x	.....	.....	.....	.....	.....	1911
New York.....	.....	x	x	x	.....	x	.....	.....	.....	.....	.....	1911
Oregon.....	x	x	x	x	x	x	x	x	.....	x	Dry farming.....	1908-14
Rhode Island.....	x	x	.....	x	x	.....	.....	.....	.....	.....	Sale of farms.....	1910-11
South Dakota.....	x	x	.....	x	x	.....	x	.....	.....	.....	.....	1908
Utah.....	x	x	.....	x	x	x	x	.....	.....	.....	Manufacturing.....	1909
Vermont.....	x	x	x	x	.....	.....	.....	.....	x	.....	Dry farming.....	1913
West Virginia.....	x	x	.....	.....	x	.....	x	.....	x	x	Reforestation.....	1911-12
Wisconsin.....	x	x	.....	x	x	.....	.....	.....	.....	.....	Manufacturing, scenery..	1908
												1909

¹ Typewritten copy made available through the courtesy of Henry B. Kummel, State geologist for New Jersey.

² Typewritten copy made available through the courtesy of South Dakota State Planning Board from a copy in the possession of the State historical society.

NOTE.—No other reports have been found in the Library of Congress or by means of correspondence with the secretaries of state and State libraries.

Such interest as was indicated in the broad aspects of conservation went little beyond quoting the Roosevelt utterances at the Governors' Conference. On the whole, the reports contributed little to working out State conceptions of comprehensive conservation programs. Notable exceptions were the reports of California, Iowa, Oregon, Rhode Island, Utah, and Vermont, whose commissions adapted their activities to the special problems of their particular State. Vermont visualized decentralized industry made possible by "white coal," and insisted upon the need for governmental control of water-power development, especially through the granting of dam franchises. The growing accumulation of abandoned farms so concerned the Rhode Island Conservation Commission that its second and third publications consisted of detailed lists of individual farms for sale or lease. Irrigation, particularly in its economic aspects, interested California and Utah, the report of the latter recommending the collection of further data for the guidance of investors, and scheduled a comprehensive survey of dry farming. Iowa published only one report, but it was very inclusive on drainage and waterways. The West Virginia commission recommended legislation for the protection of forests from fire, the prevention of natural-gas waste, the establishment of an engineering school, the conduct of irrigation experiments, and the creation of a permanent agency of inquiry armed with adequate legal powers and reinforced by regular appropriation to safeguard and promote the orderly development of resources.

²⁹ The New Mexico report was particularly one sided, restricting its attention to wildlife and geology.

Probably the most active of the State conservation commissions was the Oregon agency which published reports in 1908, 1909, 1910, 1912, and 1914. Its first report contained a regional map of Oregon, Washington, and Idaho, closely knit

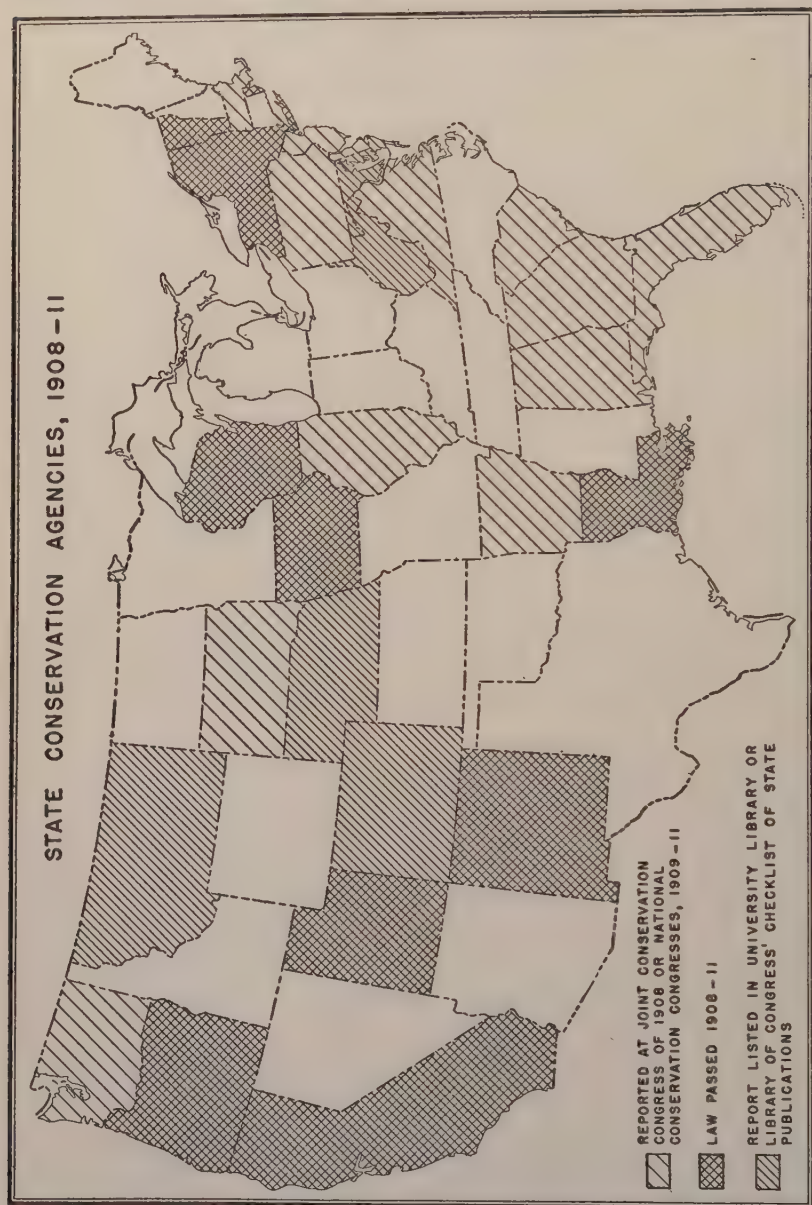


FIGURE 10

Prepared in office of the National Resources Committee

together by the common problem of water resources. Its last report in 1914 envisioned a development project of the Columbia River, which only now is being actualized. It is suggestive indeed of the profound change in western sentiment that conservation wrought that the State of Oregon should afford an

exceptional continuity of interest in conservation, as appears from the following tabular analysis of its published reports for the years 1908-14:

- 1908. Regional map of Oregon, Washington, and Idaho; water transportation; conservation and use of water resources; water laws; lands and land reclamation; forests; minerals; fisheries.
- 1909. Prize papers (forests, irrigation institutions, roads, soils, dry farming, fish); new water law; reclamation; lack of physical data; forest fire protection.
- 1910. Conservation; forests; lands and stream survey; good roads; water transportation.
- 1912. Forests; water; mineral; fish and game.
- 1914. Forests; roads; lands; minerals; homestead laws; water power; Columbia River projects; fish and game.

In the preparation of these programs conservation drew upon—

the best working cooperation for cumulative results of the State's best thought, the institutions and agencies of development of the State. It affords a basis and purpose for cooperation not only within the State, but of State with State, and of the States with the Nation. It will thus tend to do away with friction and conflict of interests between the States and relieve the National Government from a fatal overburdening and become the salvation of our Federal system.

When given a historical perspective of 1908-37, however, these early efforts of comprehensive planning of resources by the States showed little immediate continuity. All the 48 States became sufficiently interested in conservation as a new governmental activity to send a representative (of a kind) in response to Roosevelt's call for a Joint Conservation Conference in Washington, December 1908, or to one of the subsequent meetings of the quasi official National Conservation Congresses (1909-11). At least 29 States reported an official conservation commission at one or another of these meetings. (See fig. 10.) But only 17 States have left any written traces of their activities. Only 12 States established their conservation activities on a legislative foundation. Out of these 12, 4 have endured beyond the war period into the present time (Louisiana, New York, Nebraska, and Wisconsin).

Baldly told in such terms, the significance of the State conservation movement is grossly understated. Among its accomplishments which cannot be listed statistically was the establishment of the precedent of "conservation" as potentially a regular function of State government, paving the way for the post-war emergence of strong conservation departments in such States as Indiana, Michigan, North Carolina, and Minnesota. Secondly, the 4 States of Louisiana, New York, Wisconsin, and Nebraska demonstrated that conservation could actually develop as a permanent function of the State government. From an immediate practical point of view, the State conservation movement may have seemed to have accomplished little. From a long-run point of view, it actually broke down the traditional American attitude toward natural resources as inexhaustible and inaugurated on a practical scale the doctrine of public trusteeship of all natural resources.³⁰

The subsequent growth of State agencies consolidating in one administrative unit the primary responsibility for the management of natural resources has proceeded along two directions: (1) As part of the State administrative reorganization movement; (2) as an integrating tendency quite independent of State-wide administrative reorganization, including State promotion. There has been a marked tendency in very recent years to establish new integrated agencies for the management of State resources.³¹

Orthodox principles of State reorganization apparently did not provide for the establishment of a conservation agency, for the pioneer act of Illinois in 1917 placed most conservation functions in the Department of Agriculture, as was

³⁰ "Surely, the present generation will not wish to go down into history as the generation that robbed their children and their children's children." *Report of the Oregon Conservation Commission, 1908*, pp. 6-7.

³¹ In the biennium 1935 five States (Georgia, Kentucky, Missouri, Rhode Island, and Tennessee) established State departments of conservation or natural resources. See table 4.

also done by Tennessee in 1923, and South Dakota in 1925. When Illinois in 1925 set up a separate conservation department, it was questioned by Buck in his *State Administrative Reorganization*. On the other hand, the Massachusetts reorganization act of 1919 and the Michigan act of 1921 provided for the establishment of a State department of conservation, consolidating the forestry agency with the fish and game commission. The Washington reorganization act of 1921 established a department of conservation, but its scope was confined to the water and mineral resources, while a separate department of fish and game was also provided for. The reorganization act of Minnesota in 1925 established a conservation department, but it apparently was not actively organized till 1931 when a comprehensive Conservation Act was passed placing all conservation activities in one department.³²

The reorganization acts of Pennsylvania, Maine, and Maryland failed to touch the problem of the integration of resources agencies. Pennsylvania retained three separate departments of game, fish, and lands and waters; Maine kept its three separate agencies for forests, sea fisheries, and inland fisheries and game; while the Maryland act employed the term "conservation", it failed to make of the commission anything more than a wildlife agency.³³

Starting with the State of Indiana in 1919, however, a series of States undertook to integrate into one unified department the variety of State agencies in the resources field, quite apart from administrative tendencies in the rest of the State government. In 1925 Illinois created its department of conservation, as already noted. In 1927 California created a department of natural resources and Oklahoma, a conservation commission; in 1933, Florida and West Virginia a conservation department and commission respectively; and in 1937 Georgia set up a department of natural resources, while Missouri, Tennessee, and Kentucky (part of administrative reorganization) set up conservation agencies. (See table 3.)

A different approach was suggested by the State of New Jersey in 1915, in terms of "conservation and development," stressing "development" and State promotion somewhat along lines developed by chambers of commerce. In its 1917 report the New Jersey Department of Conservation and Development outlined its program for setting "New Jersey far beyond any position it ever has occupied as a food producer," as follows:

FIRST. To advertise our farm attractions as other States do and secure farmers by our merit.

SECOND. To counteract the movement from the farms to the cities by lessening the hardships and uncertainties incident to farm life, and increasing its attractions.

THIRD. To meet the labor problem in a positive way.

FOURTH. To locate and list every farm, or part of a farm, that is for sale or for rent and be prepared to find a place for every man and every family that is attracted to us.

FIFTH. To inaugurate actively and at once a campaign to exterminate the salt marsh mosquitoes.

³² "Whereas formerly the various subdivisions of the State government which dealt with matters of conservation acted independently and cooperation between these subdivisions was entirely voluntary on the part of those who directed the division affairs, and was not always to be had, under the new law this cooperation is assured * * *. Progress in conservation prior to the 1931 act was sporadic; a scientific conservation program was utterly lacking." Minnesota Conservation Commission, *First Biennial Report, 1931-32*, p. 1.

³³ In Idaho the reorganization act recognized the magnitude of the water problem by providing for a separate department of reclamation.

Table 3.—*Integration of the State management of natural resources—agencies absorbed or superseded*

Date of State Reorganization Act	Resources agency	Legal citation	Fish	Game	Land	Water	Parks	Forests	Minerals	Other
California..... 1921	Natural resources department.....	1927, c. 128.....	Xa	Xa			X X	X X	X X	
Colorado..... 1933	Conservation department.....	1933, c. 16178.....	X	X				X	X	Archeological survey.
Florida..... 1931	Natural resources department.....	1937, H. B. 159.....	Xa	Xa				Xa	Xa	
Georgia..... 1919-21	Conservation department.....	1925, p. 585.....	Xa	Xa				X		
Idaho..... 1917	do.....	1919, c. 60.....	Xa	Xa				X		
Illinois..... 1933	Conservation commission.....	1917, c. 236.....	Xa	Xa				X		
Iowa.....	Conservation department.....	1923, c. 33.....	Xa	Xa				X		
Kentucky..... 1937	Conservation department.....	(1937) Stat. 4618-121.....	Xa	Xa			X	X		
Louisiana.....	do.....	1908, Act 144.....	Xa	Xa						Entomologist apiary inspector.
Maine..... 1931	.....									
Maryland..... 1922	Conservation department.....	1919, c. 350.....	Xa	Xa				X		
Massachusetts..... 1919	do.....	1921, Act 17.....	X Xa	Xa	X		X	Xa	X	
Michigan..... 1921	do.....	1925, c. 426.....	Xa	Xa	X			X	X	
Minnesota..... 1925	do.....	1931, c. 186.....	Xa	Xa						
Missouri..... 1934	Conservation commission.....	1936, constitutional amendment.....	Xa	Xa						
Nebraska..... 1919	do.....	1913, c. 248.....				X	X X X	X	X X	
New Jersey.....	Conservation and development commission.....	1915, c. 241.....								
New York..... 1925	Conservation department.....	1911, c. 647.....	Xa	Xa			Xa	Xa	X	Economic survey.
North Carolina..... 1931	Conservation and development department.....	1925, c. 122.....	Xa	Xa						
Ohio..... 1921	Conservation division.....	1929, Code 1438.....	Xa	Xa		X X X			X	
Oklahoma.....	Conservation commission.....	1927, c. 70.....								
Pennsylvania..... 1923	.....						X			
Rhode Island.....	Agriculture and conservation department.....	1935, c. 2250.....	X X	X	X					
South Dakota..... 1925	.....									
Tennessee..... 1923	Conservation department.....	1937, c. 33.....	Xa	Xa				X	X	
Vermont..... 1923	Conservation and development board.....	1935, Act 17.....	Xa	Xa				X		
Virginia..... 1927	Conservation and development commission.....	1926, c. 169, 368.....				X			X	
Washington..... 1921	Conservation and development department.....	1925, c. 6.....				X X X			X X	
West Virginia.....	Conservation commission.....	1933, c. 55.....	Xa	Xa						
Wisconsin.....	Conservation department.....	1915, c. 406.....	Xa	Xa			X	X		
Wyoming..... 1917	.....									

This chart omits the conservation agencies of Alabama and Maryland since the agency of those States is confined to wildlife, the Arkansas Conservation Commission which is confined to minerals, and the Maine and New Hampshire Development Commissions since they do not represent any consolidation trend.
 X = an agency functioning in the specified field.
 Xa = an agency functioning in the related fields indicated by the aubsymbol.

In the second report of the North Carolina Department of Conservation and Development (established 1925), the State frankly admitted that the department was functioning "in the nature of a State chamber of commerce" by undertaking to "point out in broad terms existing conditions for the guidance of trade bodies in promoting the growth of their communities and of the State at large."³⁴ A similar agency was set up by Virginia in 1926.

The promotional approach to resources development has also been typified by a series of State development commissions, more or less short-lived, including an Alabama Industrial Development Board, the Massachusetts Industrial and Development Commission, the South Carolina Natural Resources Commission, and the Maine and New Hampshire Development Commissions. With the exception of the latter, all of these promotional agencies were abolished or ceased to exist during the course of the depression.³⁵

Even in those States having consolidated departments of conservation other agencies may be found performing overlapping functions. The Michigan Conservation Department, which performs some functions with regard to all the natural resources, shares the field of water with three other independent agencies and the field of parks with two other agencies. The same diversity of State control over natural resources is also characteristic of California, Indiana, Louisiana, Massachusetts, Minnesota, and Wisconsin. The six States of Georgia, Kentucky, New York, Rhode Island, Tennessee, and Vermont appear to have reduced to a minimum the number of independent agencies functioning with reference to some phase of natural resources; and if the functions of the agricultural experiment stations with reference to land and those of the State health department with reference to water are excluded from consideration (since they constitute a fairly universal pattern of State administrative structure), the two States of Tennessee and Vermont appear to have no other administrative agencies competing with their principal conservation agencies.

The complexity of administrative agencies and functions, even in the States having conservation agencies, may be indicated by table 4, which has been prepared with the assistance of the State planning boards. Of the 27 States reporting a "principal agency" for the management of natural resources, 1 State (Kansas) reported 11 independent agencies; 2 States, 9 agencies; 2 States, 7 agencies; 6 States, 6 agencies; 5 States, 5 agencies; 5 States, 4 agencies; 4 States, 3 agencies; and 2 States, 2 agencies. The average number of independent agencies in the 27 States is 5. In all the 27 States, independent agencies are reported in the land and water fields, in 17 States in the mineral field, in 10 States in the wildlife and park fields respectively, and in 7 States in the field of forests. From this distribution it is apparent that the oldest fields of the Government of resources—forests and wildlife—tend to be subsumed under the principal resources agency, in fact frequently constitute the very nucleus of it. It is most unlikely that the fields of land and water, or even minerals in the more important mining States, will ever be completely subsumed under a principal resources agency, because of the magnitude of State activities in these fields. But the tendency clearly appears for parks to be so administered.

³⁴ Report, 1927-28, p. 12. The Brookings Survey expressed "some doubt whether a considerable portion of the work carried on by the division of commerce and industry (in the department of conservation and development) constitutes a legitimate State service." p. 263.

³⁵ For citation, see *supra*, p. 45. State advertising dates back to the State immigration agencies created in the latter part of the nineteenth century. In 1925 the State of Arkansas established a commissioner of conservation for the inspection of animal feed. Laws 1925, c. No. 42, but the office was abolished in 1933.

Table 4.—*The State management of natural resources—Agencies and functions*

[Explanation of symbols.—The asterisk (*) indicates that the function is performed by the principal resources agency reported in the first column. The use of "X" indicates that the function is performed by an independent agency. The symbol (a, b, or c) indicates that the function is performed by an agency in association with some other function as identified by the same symbol. The use of "G" refers to a geological survey which is frequently interested in land and water problems, although this has not been specifically indicated. Illustration.—In Ohio the Conservation Division of the Department of Agriculture is concerned with wildlife, water, parks, and forests, while there are 2 other agencies concerned with water, and 2 with minerals (including the geological survey).]

State	Name of principal agency	Legal citation	Wildlife	Land	Water	Parks	Forests	Minerals
Alabama	.....	.....	Xa	Xb X	Xa X	Xb	.....	X G.
Arizona	.....	.....	Xa	X X X X	X X X	Xa	.....	X.
Arkansas	.....	.....	X	X X X X	X X	X	.....	X G X.
California	Natural resources department.	1927, c. 128.	(*)	X X X	X (*) X X	(*)	X.	(*)
Colorado	.....	.....	X	Xa X X	X	X	Xa	X.
Connecticut	.....	.....	X X	X	X	Xa	Xa	X.
Delaware	.....	.....	X	X	X	Xa	Xa	X.
Florida	Conservation department ² .	1933, c. 16178.	(*) X	X	X (*) X	Xa	Xa	(*)
Georgia	Natural resources department.	1937, No. 103.	(*)	X X	X (*) X	(*)	Xb Xc	X X Xa Xc.
Idaho	.....	.....	Xa	Xa X	X X X	Xb	(*) Xa	X Xa
Illinois	Conservation department.	1925, p. 385.	Xa (*)	X X	Xa Xb X	Xb	(*) Xa	X Xa
Indiana	do.	1919, c. 60.	(*)	X	(*) X	(*)	(*)	X Xa
Iowa	Conservation commission.	1935 Code, c. 85.	(*)	(*) X	(*) X	(*)	(*)	X G.
Kansas	Forestry, fish and game commission.	1925 c. 237.	(*)	X X X	X (*) X	(*)	(*)	X X G X X.
Kentucky	Conservation department ³ .	(1937) stat. 4618-121.	(*)	X	(*) X	(*)	(*)	X.
Louisiana	do.	1932, C. S. 9444-82.	(*)	X Xa	(*) X	(*)	(*)	Xa (*)
Maine	.....	.....	X X Xa	X	Xb X Xa	X Xa	X	X G.
Maryland	.....	.....	X	X	X X X	Xa	Xa	X
Massachusetts	Conservation department ⁴ .	1919, c. 350.	(*)	X X	X X X	Xa (*)	(*)	(*)
Michigan	do.	1921, Act 17.	(*)	X X	X X X	X (*) X	(*)	X.
Minnesota	do. ⁵ .	1931, c. 186.	(*)	X X X	X X	Xb Xa X	(*)	X G.
Mississippi	.....	.....	Xa	X X	X	Xb	Xb	X.
Missouri	Conservation commission.	1937, p. 614.	(*)	X	X	X Xa	(*)	X Xa.
Montana	.....	.....	X Xa	X X	Xb X X	Xc	Xa Xc	Xb.
Nebraska	Conservation commission.	1909, Laws 85-163.	Xa	X X X	Xa X X	(*) Xa	(*) Xa	(*)
Nevada	.....	.....	X	X X X	X X X	X	X	X Xa X.
New Hampshire	.....	.....	X X	X X	X X X X	(*)	Xa	(*)
New Jersey	Conservation and development commission.	1915, c. 241.	X X	X X	X X X X	(*)	(*)	(*)
New Mexico	.....	.....	X	X X X	X X X	X	.....	X X.
New York	Conservation department ⁶ .	1911, c. 647.	(*)	(*) X	(*) X	(*)	(*)	X.
North Carolina	Conservation and development department. ⁷	1925, c. 122.	(*)	X X	X X	(*)	(*)	X (*)
North Dakota	.....	.....	X	X X X	X X X	X Xa	Xa	X G X.
Ohio	Conservation division of agriculture department.	1929, Code 1438.	Xa (*)	Xb	(*) X X	(*) Xb	(*) Xb Xa	X G.
Oklahoma	Planning and resources board.	1937, Act 17.	X	X X	(*) X	(*)	(*)	X G.
Oregon	.....	.....	X X	X X	X X X	X	X X	X X.

See footnotes at end of table.

Table 4.—*The State management of natural resources—Agencies and functions—Continued*

State	Name of principal agency	Legal citation	Wildlife	Land	Water	Parks	Forests	Minerals
Pennsylvania.....	Forest and waters department.....	Stat. title 32.....	Xa X X.....	X X.....	Xa (*).....	(*).....	(*).....	(*) G X.
Rhode Island.....	Agriculture and conservation department.....	1935, c. 2250.....	(*).....	X.....	X X.....	(*).....	(*).....	(*).....
South Carolina.....	Conservation department.....	1937 acts, c. 35.....	X X.....	X X.....	Xa X.....	Xb.....	Xb.....	X Xa X.
South Dakota.....	Conservation department.....	1937 acts, c. 35.....	X.....	X X.....	X X.....	(*).....	(*).....	G X.
Tennessee.....	Conservation department.....	1937 acts, c. 35.....	(*).....	X X.....	X X.....	Xb.....	X Xb.....	X Xa.
Texas.....	Conservation department.....	1937 acts, c. 35.....	X.....	Xa X.....	X X.....	X.....	(*).....	G.
Utah.....	Conservation and development board.....	1935, Act 17.....	(*).....	X X X.....	X.....	(*).....	(*).....	(*) X.
Vermont.....	Conservation and development commission.....	1936 Code, c. 51D.....	X X.....	X.....	(*) X.....	(*).....	(*).....	(*) X.
Virginia (1926).....	Conservation and development commission.....	1936 Code, c. 51D.....	X X.....	X.....	(*) X.....	X.....	(*) Xa.....	(*) Xa.
Washington.....	Conservation department.....	Stat. 10819.....	X X.....	Xa X.....	(*) X.....	X.....	(*) Xa.....	(*) Xa.
West Virginia.....	Conservation commission.....	(1933) Code, c. 20.....	(*).....	X X.....	X X.....	(*).....	(*).....	X G.
Wisconsin.....	Conservation department.....	Code 23.09.....	(*) Xa.....	Xa Xb X X X.....	Xa X X X.....	(*) Xb.....	(*) Xa.....	Xa G.
Wyoming.....	Conservation department.....	Code 23.09.....	X.....	Xa X.....	Xa X X X.....	X.....	X.....	G X.

¹ Arkansas has a conservation commission (1933, Acts 234) but its functions are limited to minerals and publicity (identified as "X").

² Also concerned with archeological remains.

³ Maine's development commission (1935, c. 180) is concerned with wildlife, water and parks (identified as "Xa").

⁴ Maryland has a conservation commission (1916, c. 682) but its functions are confined to wildlife (identified as "X").

⁵ Also concerned with State publicity.

⁶ New Hampshire's planning and development commission (1935, c. 6) is concerned with wildlife, water, parks, forests, and mineral resources.

NOTE.—The names of these agencies will be found in appendix D. Most of the State planning boards are more or less concerned with all the phases of natural resources, but this has not been specifically indicated on this table.

While the State conservation of natural resources is sufficiently complex in the 27 States reporting some "principal agency," the situation is much more complicated in the 21 States having no such agency. This conclusion is borne out from the following facts: 1 State is reported to have 13 independent agencies; 2 States to have 12; 1 State, 11; 1 State, 10; 4 States, 9; 6 States, 8; 2 States, 7; 3 States, 6; and 1 State, 5. The average number of independent agencies in this group of 21 States is 9, 4 more than the average in the group having a "principal agency." It would appear that the problem of the State management of resources in this latter group is not merely one of complexity; it is one of adequacy as well. Where the number of independent State agencies tends to be large, it will probably be found that no one agency has very many powers or much money. Unfortunately data are not available to determine the validity of this hypothesis.

It should be clear that there is a very definite problem of coordination of State activities in the field of natural resources, both in the 27 States having a "principal agency" and in the 21 States without such an agency. Such data as exist tend to suggest that the problem is more difficult in the 21 States because of the fact of sheer number and the absence of any agency that may become the nucleus for such coordination. No suggestion is here made that all the natural resources should be governed by one "grand department" and by no other agency.³⁶ The facts of modern government are like all modern facts, they do not admit of mutually exclusive classifications. The problem of coordinated management of resources is typically one of "more or less," varying from the case of a single agency exercising exclusive control of all resources to a large number of legally independent agencies performing a multitude of overlapping functions. One of the fertile fields of inquiry and action by the emerging State planning agencies may well be the invention, adoption, and provision of various devices for achieving some degree of order out of the chaos that still characterizes the management of natural resources in some States.

Agencies Organized for the Primary Purpose of Comprehensive Planning.—The purpose of the conservation agencies is not primarily planning but the conduct of the day-to-day activities of the State in the management of its resources. Incidentally to the performance of this task some of the State agencies have definitely engaged in planning activities, but planning has not been their primary function. An efficient administrative agency must plan in order to do its job, but its job is not planning. Some of the abortive State conservation commissions of the earlier period could perhaps be termed State planning agencies, in view of the fact that they did not assume any administrative responsibility for the conservation of State resources because they were not sufficiently long-lived to begin their job of conservation administration. It is apparent from their reports, however, that they were planning to do the job of conservation, if the job would only materialize. In more recent times, however, prior to 1933 a few States had begun to experiment with organizations whose primary function is planning, not planning incidental to the performance of an administrative job.³⁷ This concluding section is designed to discuss this recent trend.

In the period before 1933 New York, New Jersey, and Wisconsin had taken official steps to recognize planning as the primary function of a State agency. An account has already been given in chapter I of the New York Commission on Housing and Regional Planning (1923-26) and its brilliant report on the "forces which have shaped the economic history of the State" in order to "find

³⁶ "Conservation is not a function; it is rather a policy, an attitude of mind. Oil conservation involves one sort of technology; water conservation, another. They have nothing in common except an idea, and they may be accomplished by different means. There is, therefore, no reason why oil conservation should not remain where it is—in the Corporation Commission." *Brookings' Survey of Oklahoma* (1935), p. 167.

³⁷ See Bassett, Williams, Bettman, and Whitten, *Model Laws for Planning Cities, Counties, and States* (1935), pp. 28-30, 53-54, 73-74, 114-119, 131.

a basis for State Planning" as a permanent function of the State government.³⁸ In 1929 both New Jersey and Wisconsin passed laws to provide for the organization of a State agency of regional planning. The immediate precedents for this legislation were city and metropolitan planning, and the function of the State agency was conceived in terms of the promotion of this type and level of planning.³⁹ Thus, the Wisconsin law provided that the "director of regional planning" should—

cooperate and assist all local planning agencies in the State to the end that their activities may be properly coordinated in the interest of the State as a whole; to gather and disseminate city, town, and regional planning information * * *.

The duties of the director of regional planning also included cooperation with the State conservation commission in "the development of a recreational system plan for the State" and with the State board of health in "the regulation and control of lake and stream platting." The director must be a civil engineer with practical experience in city planning. His office was attached to the highway commission.⁴⁰ It was an expansion of this office that resulted in the present State planning commission.

In New Jersey the legislature did not designate its special commission of 1929 as a planning commission until the supplemental appropriation act of 1930, but the functions were set out in the 1929 act as to "study and recommend to the next legislature a plan or plans to carry out and administer intermunicipal, intercounty, and interstate projects" and generally to effectuate "cooperation and coordination" in the construction and operation of public-work projects affecting more than one governmental unit.⁴¹ The commission sponsored a bill before the legislature dividing the State into four regional districts, each with authority to issue bonds for the construction of public works; but the bill failed of passage because of the strong opposition of local officialdom, and nothing more apparently resulted out of this regional planning commission.⁴²

On the unofficial side, the Illinois Chamber of Commerce in 1931 retained City Planner Jacob Crane to outline "comprehensive planning for the development of Illinois." His report included a discussion of the major natural resources (land, minerals, and water), balanced distribution of population, localization of industry, and high water and airways.⁴³

Such were the State precedents at hand when the National Planning Board in December 1933 called the attention of State officials to the possibilities of financing State planning under the emergency-relief grants. The response of the States to this suggestion was immediate and overwhelming. All but one State (Delaware) has provided for an official State planning agency, by act of the legislature or executive order of the Governor, to serve as a "technical instrument of democratic government," in the words of the Iowa law, in planning the most effective utilization of the natural and human resources of the State.⁴⁴

³⁸ *Supra*, p. 15.

³⁹ Cf. Charles A. Beard, "Some Aspects of Regional Planning," *American Political Science Review*, XX: p. 273 (1926).

⁴⁰ *Wisc. Laws*, 1929, c. 276.

⁴¹ N. J. Resolves, 1929, No. 13; 1930, No. 7.

⁴² See *City Planning*, VII: p. 264. The reports of the New Jersey Planning Board have made no reference to the activities of this earlier committee, so far as the present author is aware.

⁴³ The report was apparently made in January 1931, but the report examined by the author is dated 1934 and mimeographed "by courtesy of the Illinois Chamber of Commerce for the use of the Illinois State Planning Commission."

In 1933 Mr. Crane prepared for Iowa a 25-year conservation program, involving parks, wildlife, landscaping, land and water use and the selection of botanic and historic sites. See his article on "State Planning in Illinois and Iowa," *City Planning*, VIII, pp. 89-98. In the same years the Brookings Institution in its survey of Iowa recommended the establishment of a research and planning council, with the director of legislative reference as its executive officer. *Report* (1933), pp. 606-607. This same recommendation was made in its Oklahoma survey, along with the recommended abolition of the existing State planning board. *Report* (1925), pp. 405-406. The Conference on State Planning, held by the American society of Planning Officials in Chicago, December 12-13, 1935, vigorously objected to the Brookings proposal for confusing the functions of a planning board with those of a legislative reference agency.

⁴⁴ *Iowa Laws* 1937, c. 235. Also Clifford J. Hynning and McDonald Salter, "Laws of Planning," *State Government*, June 1936.

APPENDIX A

Establishment of State agencies concerned with natural resources

	Forest agency	Geological survey	Fish Agency	Joint fish and game agency	Parks
	(1)	(2)	(3)	(4)	(5)
Alabama.....	1907	1847	1870	1907	1923
Arizona.....		1895	1881	1887 F	
Arkansas.....	1931	1857	1875	1915	1927
California.....	1885	1853	1870	1909	1927
Colorado.....	1885	1874	1877	1891 F	1937
Connecticut.....	1901	1835	1867	1895	1912
Delaware.....	1909	1837	1881	1879 G	1927
Florida.....	1927	1853		1913	1925
Georgia.....	1921	1836	1876	1911	1925
Idaho.....	1905	1919		1899	1919
Illinois.....	1917	1851	1879	1899 G	1917
Indiana.....	1901	1837	1881	1899	1916
Iowa.....	1906	1855	1874	1897	1920
Kansas.....	1887	1864	1877	1905	1925
Kentucky.....	1906	1854		1912	1924
Louisiana.....	1904	1891		1908	1926
Maine.....	1891	1836	1878	1880 F	1933
Maryland.....	1906	1833	1874	1896	1906
Massachusetts.....	1904	1830	1865	1886 F	1891
Michigan.....	1899	1837	1873	1887	1919
Minnesota.....	1895	1872	1874	1887 G	1925
Mississippi.....	1926	1850		1932	1926
Missouri.....	1925	1853	1877	1895	1919
Montana.....	1909	1919		1895	1907
Nebraska.....	1917	1891	1879	1901	1921
Nevada.....		1866	1877	1921	1935
New Hampshire.....	1893	1840	1864	1878 F	1909
New Jersey.....	1905	1835	1870	1894 F	1915
New Mexico.....		1905		1903	1935
New York.....	1885	1836	1868	1888	1885
North Carolina.....	1905	1823	1915	1925	1925
North Dakota.....	1891	1895		1893	1915
Ohio.....	1885	1837	1873	1886	1902
Oklahoma.....	1925	1899		1899	1927
Oregon.....	1899	1872	1874	1893	1917
Pennsylvania.....	1895	1836	1873	1895 G	1923
Rhode Island.....	1909	1839	1870	1899 G	1904
South Carolina.....	1927	1824	1878	1907 G	1927
South Dakota.....	1911	1893		1909	1935
Tennessee.....	1905	1831		1903 G	1925
Texas.....	1915	1858	1879	1907 F	1923
Utah.....				1890	1925
Vermont.....	1904	1844	1867	1892	1927
Virginia.....	1914	1835	1875	1916	1926
Washington.....	1903	1891	1889	1890 G	1919
West Virginia.....	1909	See Va.		1897	1925
Wisconsin.....	1895	1839	1876	1887 G	1907
Wyoming.....		1873	1879	1895 F	

Source: (1) *A National Plan for American Forestry* (1933), as supplemented by data furnished by Prof. Joseph Illick of Syracuse University; (2) U. S. Geological Survey Bulletin No. 465 (1911) and National Research Council Bulletin 88 (1932); (3) original examination of State session laws; (4) T. S. Palmer, *Chronological Index of the More Important Events in American Game Protection* (U. S. Biological Survey Bulletin No. 41, 1911), as supplemented by data in the files of the U. S. Biological Survey and examination of State session laws; (5) data supplied by the National Park Service, as supplemented by Beatrice Nelson, *State Recreation* (1928).

G signifies that a game agency was first set up independently of the joint fish and game agency.

F signifies that the duties of the fish commission (reported in column 3) were extended to subsume game protection.

APPENDIX B

Establishment of State agencies concerned with human resources

	Educa- tion	Health	Labor	Welfare		Educa- tion	Health	Labor	Welfare
	(1)	(2)	(3)	(4)		(1)	(2)	(3)	(4)
Alabama.....	1854	1875	1935	1919	Nebraska.....	1869	1891	1887	1901
Arizona.....	1870	1903	.....	1912	Nevada.....	1866	1893	.....	1933
Arkansas.....	1874	1881	1913	1893	New Hampshire...	1846	1881	1893	1895
California.....	1851	1870	1883	1897	New Jersey.....	1845	1877	1878	1883
Colorado.....	1861	1893	1887	1891	New Mexico.....	1890	1903	.....	1921
Connecticut.....	1838	1878	1873	1873	New York.....	1812	1880	1883	1867
Delaware.....	1913	1879	.....	1919	North Carolina...	1852	1877	1887	1869
Florida.....	1868	1889	.....	1917	North Dakota....	1867	1899	1889	1911
Georgia.....	1868	1903	1912	1919	Ohio.....	1837	1886	1877	1867
Idaho.....	1864	1907	.....	1919	Oklahoma.....	1891	1890	1907	1908
Illinois.....	1854	1877	1879	1869	Oregon.....	1872	1903	1903	1913
Indiana.....	1852	1881	1879	1889	Pennsylvania.....	1834	1885	1872	1869
Iowa.....	1841	1880	1884	1898	Rhode Island.....	1843	1878	1887	1869
Kansas.....	1859	1885	1885	1873	South Carolina...	1868	1878	1909	1915
Kentucky.....	1838	1878	1892	1906	South Dakota....	1867	1895	.....	1890
Louisiana.....	1833	1855	1901	1904	Tennessee.....	1836	1877	1891	1915
Maine.....	1846	1885	1887	1913	Texas.....	1871	1879	1909	1919
Maryland.....	1826	1874	1884	1900	Utah.....	1852	1898	1901	1935
Massachusetts...	1837	1869	1869	1863	Vermont.....	1827	1886	.....	1917
Michigan.....	1829	1873	1883	1871	Virginia.....	1870	1872	1898	1908
Minnesota.....	1858	1872	1887	1883	Washington.....	1872	1891	1895	1901
Mississippi.....	1868	1877	.....	1886	West Virginia....	1869	1881	1889	1909
Missouri.....	1839	1883	1879	1897	Wisconsin.....	1849	1876	1883	1871
Montana.....	1866	1901	1893	1907	Wyoming.....	1869	1901	1917	1891

Source: (1) E. G. Dexter, *A History of Education in the United States* (1904), appendix G as corrected by E. W. Knight, *History of Public Education in the United States* (1929), pp. 285-292; (2) J. A. Ferrell et al., *Health Departments of the States and Provinces of the United States and Canada* (U. S. Public Health Bulletin No. 184, 1936); (3) W. F. Willoughby, *State Activities in Relation to Labor in the United States* (1901), p. 11, as supplemented by data supplied by the library of the U. S. Department of Labor; (4) S. P. Breckinridge, *Public Welfare Administration in the United States* (1927), as supplemented by an examination of State session laws.

APPENDIX C

[Schedule (partially filled in) sent to state planning boards]

NATIONAL RESOURCES COMMITTEE

..... (Name of agency) (Address)

..... (Name of executive officer) (Title)

Does this agency have a governing board? Yes ☐ No ☐

If it does have a board, please list the names of the chairman and board members.
(Indicate ex officio members by an asterisk*.)

..... (Chairman)

.....

.....

If this agency has statutory authority, cite the State laws governing its powers and operations

.....

Did this agency have its origin in the activities of other official or unofficial agencies? Yes ☐ No ☐

If this agency did have its origin in other agencies, please list the full names of the agencies which the present agency replaced or succeeded.

.....

.....

.....

List the present divisions of the agency and the name of the chief of each division:

..... (Name of Chief)

..... (Name of Chief)

..... (Name of Chief)

..... (Name of Chief)

..... (Name of Chief)

..... (Name of Chief)

..... (Name of Chief)

Check those resources with which the activities of this agency are principally concerned:

Fish ☐; commercial fisheries ☐; game ☐; forests ☐; parks ☐; water ☐; power ☐; mineral ☐

Other (specify).....

.....

APPENDIX D

List of State Agencies Engaged in the Management of Natural Resources

- ALABAMA:** Conservation Department of Game, Fish, and Seafoods; Agricultural Experiment Station; Coal Mine Inspector; Forestry Commission; Geological Survey; Sanitation Bureau of Public Health Department.
- ARIZONA:** Agricultural Experiment Station; Colorado River Commission; Game and Fish Commission; Health Board; Land Commission; Land Settlement Board; Mines Bureau; Water Commission.
- ARKANSAS:** Conservation Commission; Agricultural and Industrial Commission; Agricultural Experiment Station; Flood Control Commission; Forestry Commission; Game and Fish Commission; Geological Survey; Health Board; Mine Inspector; Parks Commission; Soil Conservation; State Land Commission.
- CALIFORNIA:** Natural Resources Department; Agricultural Experiment Station; Finance Department; Public Works Department; Sanitary Engineering Bureau of Public Health Department.
- COLORADO:** Agricultural Experiment Station; Game and Fish Commissioner; Land Commissioners Board; Mines Bureau of Executive Department; Park Board; Sanitary Engineering Division of Public Health Department; Soil Conservation Committee.
- CONNECTICUT:** Agricultural Experiment Station; Fisheries and Game Board; Geological and Natural History Survey Commission; Park and Forest Commission; Sanitary Engineering Bureau of Health Department; Shell Fish Commissioners; Water Commission.
- DELAWARE:** Agricultural Experiment Station; Forestry Department; Game and Fish Commissioners; Health Board; Park Commission.
- FLORIDA:** Conservation Department; Agricultural Experiment Station; Drainage Commissioners; Forest and Park Service; Game and Fresh Water Fish Commission; Sanitation Bureau of Health Board; Soil Conservation Committee.
- GEORGIA:** Natural Resources Department; Agricultural Experiment Station; Sanitary Engineering Division of Public Health Department; Soil Conservation Committee.
- IDAHO:** Agricultural Experiment Station; Cooperative Forestry Board; Fish and Game Department; Land Commissioners; Mines and Geology Bureau; Mines Inspector; Public Works Department; Reclamation Department; Sanitary Engineering Bureau of Public Welfare Department.
- ILLINOIS:** Conservation Department; Agricultural Experiment Station; Mines and Minerals Department; Public Works and Buildings Department; Registration and Education Department; Sanitary Engineering Division of Public Health Department; Soil Conservation Committee.
- INDIANA:** Conservation Department; Agricultural Experiment Station; Mines and Mining Division of Labor Department; Sanitary Engineering Bureau of Public Health Division of Commerce and Industry Department; Soil Conservation Committee.
- IOWA:** Conservation Commission; Agricultural Experiment Station; Geological Survey; Mine Inspection Department; Public Health Engineering Division of Health Department.
- KANSAS:** Forestry and Fish Game Commission; Agricultural College; Agricultural Experiment Station; Agriculture Board; Corporation Commission; Geological Survey; Labor and Industry Department; Land Office; Mine Examining Board; Sanitation Division of Health Board; Soil Conservation Committee.
- KENTUCKY:** Conservation Department; Agricultural Experiment Station; Health Department; Mines and Minerals Department.
- LOUISIANA:** Conservation Department; Agricultural Experiment Station; Health Department; Land Commission.
- MAINE:** Agricultural Experiment Station; Development Commission; Forest Service; Inland Fisheries and Game Commissioner; Park Commission; Public Utilities Commission; Sanitary Engineering Division of Health and Welfare Department; Sea and Shore Fisheries Commission.
- MARYLAND:** Conservation Commission; Agricultural Experiment Station; Forestry Department; Geological Survey; Minerals Commission; Sanitary Engineering Bureau of Health Department; Soil Conservation Committee; Upper Potomac River Committee; Water Resources Commission.
- MASSACHUSETTS:** Conservation Department; Agricultural Experiment Station; Public Works Department; Metropolitan District Commission; Sanitary Engineering Division of Public Health Department; State College.

- MICHIGAN:** Conservation Department; Agricultural Experiment Station; Engineering Bureau of Health Department; Great Lakes Tidewater Commission; Isle Royal Park Commission; Mackinac Island Park Commission; Stream Control Commission; Soil Conservation Commission.
- MINNESOTA:** Conservation Department; Agricultural Experiment Station; Land Use Committee; Sanitation Division of Health Department; Soil Conservation Committee; University of Minnesota.
- MISSISSIPPI:** Agricultural Experiment Station; Forestry Commission; Game and Fish Commission; Geological Survey; Land Commission; Park Service; Sanitary Engineering of Health Board.
- MISSOURI:** Conservation Commission; Agricultural Experiment Station; Geological Survey and Water Resources Department; Mines Bureau; Park Board; Sanitary Engineering of Health Board.
- MONTANA:** Agricultural Experiment Station; Fish and Game Commission; Forest Department; Lands and Investments Commissioner; Mines and Geology Bureau; School of Forestry; Water and Sewage Division of Public Health Department; Water Conservation Board.
- NEBRASKA:** Conservation Commission; Agricultural Experiment Station; Game, Forestation and Parks Commission; Roads and Irrigation Department; Soil Conservation Committee.
- NEVADA:** Agricultural Experiment Station; Colorado River Commission; Engineer; Fish and Game Commission; Industry, Agriculture and Irrigation Bureau; Irrigation Board; Land Office; Mines Bureau; Mines Inspector; Park Commission; Range Commission; Soil Conservation Committee.
- NEW HAMPSHIRE:** Agricultural Experiment Station; Chemistry and Sanitation Division of Health Board; Fish and Game Department; Forestry and Recreation Department; Land Use Board; Planning and Development Commission; Water Resources Board.
- NEW JERSEY:** Conservation and Development Commission; Agricultural Experiment Station; Engineering Bureau of Health Department; Fish and Game Commissioners Board; Interstate Sanitation Commission; North Jersey District Water Supply Commission; Passaic Valley Flood Control Commission; Shell Fisheries Department; Soil Conservation Committee; Water Policy Commission.
- NEW MEXICO:** Agricultural Experiment Station; Game and Fish Commission; Interstate Stream Commission; Mines and Mineral Resources Bureau; Mines Inspector; Park Commission; Public Lands Commissioner; Sanitary Engineering and Sanitation Division of Public Health; State Engineer; Soil Conservation Committee.
- NEW YORK:** Conservation Department; Agricultural Experiment Station; Labor Department; Sanitation Division of Health Department.
- NORTH CAROLINA:** Conservation and Development Department; Agricultural Experiment Station; Labor Department; Sanitary Engineering Division of Health Board; Soil Conservation Committee.
- NORTH DAKOTA:** Agricultural Experiment Station; Engineer; Game and Fish Department; Geological Survey; Historical Society; Land Department; Forestry School; Mine Inspector; Mines School; Sanitary Engineering Bureau of Public Health Department; Soil Conservation Committee; Water Conservation Commission.
- OHIO:** Conservation Division of Agriculture Department; Agricultural Experiment Station; Co-operative Wild Life Research; Geological Survey of Education Department; Industrial Relations Department; Sanitary Engineering Division of Health Department; Water Conservation Board.
- OKLAHOMA:** Planning and Resources Board; Agricultural Experiment Station; Corporation Commission; Game and Fish Commission; Geological Survey; Sanitary Engineering Department of Public Health; Soil Conservation Committee.
- OREGON:** Agricultural Experiment Station; Fish Commission; Board of Forest Conservation; Forestry Board; Game Commission; Geology and Mineral Industry Board; Highway Commission; Hydroelectric Commission; Land Commission; Mining Board; Sanitary Engineering Division of Health Board; Reclamation Commission.
- PENNSYLVANIA:** Forest and Waters Department; Agricultural Experiment Station; Fish Commissioners Board; Game Commissioners Board; Mines Department; Sanitary Water Board; Soil Conservation Committee; Topographic and Geology Survey.
- RHODE ISLAND:** Agriculture and Conservation Department; Agricultural Experiment Station; Public Works Department; Sanitary Engineering and Chemical Division of Public Health Department.
- SOUTH CAROLINA:** Agricultural Experiment Station; Agriculture, Commerce, and Industry Commission; Fishery Board; Forestry Commission; Game and Fish Commission; Phosphate Board; Public Service Authority; Rural Sanitation and County Health Work of Health Board, Soil Conservation Committee.
- SOUTH DAKOTA:** Agricultural Experiment Station; Engineer; Game and Fish Commission; Geological and Natural History Survey; Mine Inspector; Park Board; Sanitary Engineering Division of Health Board; Soil Conservation Committee.
- TENNESSEE:** Conservation Department; Agricultural Experiment Station; Labor Department; Sanitary Engineering Division of Public Health Department.

- TEXAS: Agricultural Experiment Station; Forest Service; Game, Fish, and Oyster Commission; General Land Office; Park Board; Railroad Commission; Sanitary Engineering Bureau of Health Department; Water Engineering Board.
- UTAH: Agricultural Experiment Station; Fish and Game Commissioner; Geological and Mineralogical Survey; Land Board; Park Commissioners; Sanitary Engineering Division of Health Board; Soil Conservation Committee; Water Storage Commission.
- VERMONT: Conservation and Development Board; Agricultural Experiment Station; Sanitary Engineering Division of Public Health.
- VIRGINIA: Conservation and Development Commission; Agricultural Experiment Station; Fisheries Commission; Game and Inland Fisheries Commission; Health Department; Labor and Industry Department.
- WASHINGTON: Conservation and Development Department; Agricultural Experiment Station; Fisheries Department; Game Department; Parks Committee; Public Lands Commissioner; Public Health Engineering Division of Health Department.
- WEST VIRGINIA: Conservation Commission; Agricultural Experiment Station; Geologic and Economic Survey; Mines Department; Public Land Corporation; Sanitary Engineering Division of Health Department; Water Commission.
- WISCONSIN: Conservation Department; Agricultural Experiment Station; Deep Waterways Commission; Geological and Natural History Survey; Land Economic Inventory Department; Public Lands Commissioners; Public Service Commission; Sanitary Engineering of Health Board; Soil Conservation Committee.
- WYOMING: Agricultural Experiment Station; Board of Control; Coal Mine Examining Board; Engineer; Game and Fish Commission; Geological Survey; Land Commissioners Board; Public Health Department; Water Conservation Board.

This list is taken from a Check List of State Agencies and Officials Concerned with the Management of Natural Resources, mimeographed, autumn, 1937, prepared by the author in cooperation with the State planning boards and other research agencies in the States, whose assistance is hereby gratefully acknowledged.

INDEX

- Adams, Henry, 49
 Adams v. Tanner, 78n
 Adkins v. Children's Hospital, 76n
 Alabama, 20n, 37n, 38, 41, 43n, 68, 74n, 81n, 89n, 101, 105, 106, 108
 Industrial Development Board, 20, 100
 American Association for the Advancement of Science, 29, 41
 American Fish Culturists Association, 55
 American Philosophical Society, 67
 American Scenic and Historic Preservation Society, 32
 Arid regions, report on, 21, 58, 59
 Arizona, 7n, 20n, 26n, 38n, 60, 61, 74n, 76n, 78n, 81n, 82, 89n, 101, 105-6, 108
 Arkansas, 37, 43n, 61n, 74n, 76n, 78n, 81n, 89n, 98n, 101, 105-6, 108
 Artificial replenishment of resources, 52
 Bailey, L. H., 89-90
 Baird, S. F., 56
 Bandini v. Superior Court, 9n
 Bankhead, John H., 86
 Barnard v. Monongahela National Gas Co., 43n
 Barrett, C. S., 90
 Beard, Wm. A., 90
 Benton, Senator, 19
 Blackstone, Sir. Wm., 2, 6n, 36n
 Blades v. Higgs, 6n
 Blatchley, 43
 Blind, care of, 79
 Blodgett, Wm., 47
 Boudinot, 19
 Breckinridge, S. P., 79, 81
 "Broad arrow," 2
 Bryan, Wm. J., 87
 Burton, Th. E., 86
 Butterfield, K. L., 90
 Calhoun, John C., 49, 57
 California, 2-3, 7n, 8, 20, 29, 32, 37, 41, 43n, 54, 58n, 60, 61, 74n, 76n, 78n, 81n, 82, 83, 89n, 105-6, 108
 Conservation Commission, 89n, 91, 93, 94, 95
 Natural Resources Department, 98, 99, 100, 101
 Park Plan, 34
 Water Plan, 62, 63
 Camac, Turner, 47
 Canal era, planning in, 47-52
 "Capture" theory, 7, 9, 43
 Carnegie, Andrew, 87
 Champlin Refining Co. v. Oklahoma Corporation Commission, 9, 44n
 Chapman, Nathaniel, 67
 Child:
 Crippled, education of, 70
 Hygiene, 74
 Labor, minimum age for, 70
 Special commissions on, 81
 Chittenden, Captain, 60
 Chronology of resources management, 3-4
 Clinton, De Witt, 10, 12-13, 28
 Closed season, 22-23
 Coal, 21, 38, 42
 Mine inspection, 42, 78
 Strip mining, no control of, 42
 Colorado, 7n, 26n, 29, 37n, 43n, 58n, 61n, 69, 74n, 76n, 78n, 81n, 89n, 101, 105-6, 108
 Conservation Commission, 89n, 95
 Immigration bureau, 20
 Colvin, Verplanck, 13
 Commonwealth v. Trent, 9n
 Community Planning, 16, 82
 Comprehensive Planning, technique of, 84-90, 92-97, 103-04
 Primary planning agencies, 103-04 (New Jersey), 14-16, 103 (New York), 103-04 (Wisconsin).
 Connecticut, 22, 26n, 28, 68, 71, 76n, 78n, 79, 81n, 82, 89n, 101, 105-6, 108
 Fish commissioners, 52-54
 Conservation administration, integration of, 97-104
 Conservation commissions, state, 10, 90-97
 Achievements of, 85, 97
 Appropriations for, 91, 94
 Federal cooperation with, 91-93
 Governors' Conference, influence of, 90
 Joint Conservation Conference, 91
 Legislation, analysis of, 91-94
 Map, 96
 Reports, scope of, 94-97
 Tables, 93, 95, 99, 101-02
 Conservation movement, 84-103
 Beginnings of, 3, 84-90
 Multiple-use theory, 85
 Politics, effect on national movement, 90
 Scope of, v, viii, 88-89
 Significance of, viii, 3
 Stages in the development of, 88
 Conway v. New Hampshire Water Resources Board, 8n
 Coram, Robert, 67
 Correlative rights, legal theory of, 9, 43
 Country Life Commission, 86, 89-90
 Courts, attitude toward resources, 5-10, 71, 76, 78, 82
 Crane, J., 34, 104
 Cunningham v. Northwest Improvement Co., 76n
 Deaf, care of, 79
 Deane, Silas, 36
 Deer reeves, 23
 Delaware, 20n, 24, 26n, 50, 69, 74n, 81n, 83, 89n, 101, 105-6, 108
 Delinquent, state institutions for, 79
 Democratic setting, 2
 Development agencies, state, 19-20, 98, 100

- Dix, Dortha, 79
 Drainage, 58
 Du Pont de Nemour, 67
 Education, 66-71
 Administrative evolution of, 10, 68-69
 Crippled children, 70
 Deaf, 70
 "First duty of the State," 67
 Higher, 68
 Land grants, 18
 Map, 70
 Minimum standards, 66, 68
 Plans for, 67
 Secondary, 67-68
 State aid for, 69
 Vocational, 71
 Ellet, Charles, 57-58
 Engineer, office of state, 58, 60-61
 Erie Canal, 10, 12-13
 Euclid v. Amber Realty Co., 6n
 Ewing, Secretary, 37
 Federal aid, effect on state administration, 29-31,
 68, 71, 74, 77, 79, 81
 Federal Board of Engineers, 49-50
 Federal Oil Conservation Board, 43, 44
 Feeble-minded, care of, 79
 Ferae naturae, legal theory of, 6-7, 9
 Fernow, 28
 Ferris, Governor, 22
 Field, Justice, 8-9
 Fish conservation, 52-56
 Commissions, 52-56
 Game, relation to, 56
 Interstate cooperation, 52-54
 Map, 55
 New England Commissioners of River Fish-
 eries, 53-54
 Pollution, control of, 53
 Scientific emphasis in, 54
 Wardens, 24
 Fishing and hunting, 22, 23-24, 26
 Flood, 56-58
 Levees, 57
 Minor role of state 56
 Navigation projects, 57
 Reservoir plans, 58-59
 Swamp-land grants, 57
 Florida, 20n, 38n, 74n, 81n, 89n, 91, 105-06, 108
 Conservation Department, 98, 99, 101
 Forest administration, 26-31
 Conservation agencies, relation to, 30-31
 Federal aid, 29-31
 Fire protection, 27, 29, 31
 Map, 30
 Personnel, interstate movement among, 31n
 Planning consciousness, 31
 Planting, 27-28
 Private lands, control of, 6
 Reserves, 21, 27
 Frontier, 2, 3, 23
 Gallatin, Secretary, 48, 49
 Game administration, 24-26
 Census of game, 26
 Constable, 24
 Constitutions, 2
 Fish commissions, relation to, 24-26
 Legislation, 10, 22-24
 Map, 25
 Game administration—Continued.
 Preserves, 26
 Private associations, 24
 Warden, 23, 25
 Gas conservation, 43
 Geddes, Patrick, 15
 Geer v. Connecticut, 7
 Chart, 40
 Civil War, effect of, 41
 Intermittent activities, 40 (chart), 41
 Universities, relation to, 41
 Georgia, 2, 18, 20, 28, 50, 68, 74n, 78n, 89n, 91,
 101, 105-6, 108
 Natural Resources Department, 97n, 98, 99,
 100
 Glavis, L., 94
 Governors, Conference of, 86-87
 Great Ponds, 31-32
 Green, Seth, 54
 Hamilton, Alexander, 19
 Hasse, Adelaide, 10n, 39
 Health administration, 71-75
 Child hygiene, 74
 Colonial activities, 71-72
 Local authorities, 72
 Map, 73
 National Board of Health, 73-74
 Quarantine authorities, 72
 Rural health, 74
 Henderson v. Thompson, 9n
 Hicks v. Bell, 8n
 Hitchcock, Edw., 39
 Holmes, Justice, 8
 Homestead, 18-19
 State commissions on, 82-83
 Hough, Franklin B., 29
 Hour limitations, 75-76
 Housing, 14-16, 82-83
 Hudson Water Co. v. McCarter, 7-8
 Human resources, 64-73, 88-90
 Standards of life, concept of, 65-66
 Hyde, Secretary, 22
 Idaho, 7n, 20n, 60n, 61, 74n, 81n, 90, 91, 98n,
 101, 105-06, 108
 Buffalo, closed season for, 23
 Illick, J. S., 31
 Illinois, 26n, 37, 41, 42, 43n, 50, 56, 74n, 76n,
 78, 79, 81, 83n, 89n, 97, 105-6, 108
 "Comprehensive Planning," 104
 Conservation Department, 95, 98, 99, 101
 Geological survey, 41
 Immigration bureaus, 19-20
 Indiana, 37n, 42n, 43n, 50, 66n, 68, 71, 74n, 78n,
 81n, 82, 89n, 105-6, 108
 Conservation Department, 34, 97, 98, 99,
 100, 101
 Geology and Natural Resources Department,
 43
 "Inexhaustibility," legend of, 2
 Inland Waterways Commission, 86-87
 Insane, care of, 79
 Internal improvement plans, 47-52
 Interstate activities:
 Conservation, 93-94
 Fish conservation, 52-54
 Oil compact, 44
 Personnel, movement of, 31n
 Welfare, 79

- Iowa, 37, 74n, 78n, 81n, 104, 105-6, 108
 Conservation Commission, 91, 93, 95, 99, 101
 "Conservation Plan," 34, 104n
- Irrigation, 58-61
 Carey act, 60
 Congresses, 60
 Engineer, 58
 Mormons, 58
 Reclamation act, 60
 Surveys, 59
- Ives v. South Buffalo Ry., 76n
- Jefferson, Thomas, 18, 49, 67
- Joint Conservation Conference, 86, 89, 90-91
 Proposal for joint Federal-state Committee on conservation, 91
- Julian v. Capshaw, 9n, 44n
- Kansas, 37n, 42n, 43n, 44, 45, 61n, 74n, 76n, 78n, 81n, 89n, 105-6, 108
 Conservation Commission, 93
 Forestry, Fish & Game Commission, 101
 Water Commission, plans of, 62
- Kentucky, 12, 41, 42n, 43n, 70, 74, 78n, 79, 81n, 82, 89n, 105-6, 108
 Conservation Department, 97n, 98, 99, 100, 101
- Knox, Samuel, 67
- Labor administration, 75-79
 Child labor, 75
 Compensation, 76
 Employment offices, 78
 Factory inspection, 78
 Hours, 75-76
 Industrial rehabilitation, 77
 Map, 77
 Safety, 76, 78
 Statistics, bureaus of, 78
 Wages, 76
- Land administration, 17-34
 Classification of public lands, 20-22
 Compact settlement, 18, 32
 Control of land use, 6
 Disposal plans, 18-19
 Economic inventories, 22
 Homestead acts, 18-19
 Ordinances of, 1784-85, 18
 Preemption, 19
 Rectangular survey, 18
 Settlement guidance, 19-20
 Use surveys, 22
 Withdrawal of public lands, 21-22
- Law of resources management, 5-10
 "Capture" theory, 7, 9, 43
 Correlative rights theory, 9, 43
 Ferae naturae theory, 6-7, 9
 Police power, 4-6
 Public ownership theory, 6
 Regalian rights, 3, 8
 Sovereign rights, 2, 6-9, 36-37
 Waste prevention, 9
- Leopold, A., 26
- Lindsay v. Natural Carbonic Gas Co., 9n
- Louisiana, 7n, 20n, 21, 38n, 43n, 44, 61n, 72, 74, 78n, 81n, 89n, 105-6, 108
 Conservation Commission, 91-92, 93, 94, 95, 97, 99, 100, 101
- Levees, effect on floods, 57
- McCready v. Virginia, 7
- McGee, W. J., 86, 88n
- MacKaye, Benton, 15
- MacKenzie, Gen., 86
- Magner v. People, 7n
- Maine, 24, 26n, 28, 52, 53, 81n, 82, 89n, 91, 98, 105-6, 108
 Development Commission, 20, 100, 101
- Management of natural resources, State agencies for, 84-85, 97-104
- Mann, Horace, 69
- Maps, 25, 30, 33, 40, 55, 70, 73, 77, 80, 96
- Marrs v. Oxford, 45n
- Marsh, George P., 2n, 52, 59, 60
- Maryland, 9, 20, 24, 62n, 69, 74n, 76, 78n, 81n, 83n, 89n, 105-6, 108
 Conservation Commission, 91, 95, 98, 101
- Massachusetts, 7n, 22, 23, 26n, 27, 31-32, 33n, 34, 36, 47, 50n, 62n, 66-68, 70, 71, 72, 74n, 75, 76, 77, 78, 79, 81n, 82, 83n, 89n, 91, 105-6, 108
 Conservation Department, 98, 99, 100, 101
 Development Commission, 20, 100
 Education Board, 69
 Fish Commissioners, 52-54
 Health Board, 72
 Homestead Commission, 82
 Surveys of 1829-41, 39-40
 Welfare Board, 79
- Mercantilism, 22, 27
- Merriam, Charles E., viii, 65n
- Michigan, 12, 20, 23n, 25n, 32, 37, 38, 41, 43n, 62n, 68, 69, 74n, 78n, 80, 81n, 89n, 105-6, 109
 Conservation Department, 22, 97, 98, 99, 100, 101
 Land economic inventory, 22
 Mineral rights, reservation of, 38
 Public Domain Commission, 93
- Miller v. Schoene, 6n
- Mineral fuels, 41-45
 Little control of, 41
 Production stabilization, 42
 Technology, 42
- Minerals on public lands, 36-38
 Grants of, 36
 Lease of, 37
 Reservation of, 18, 21-22, 36, 38
 Sale of, 37
- "Mines royal," rejected in America, 8
- Minnesota, 20n, 22n, 25n, 26n, 32, 37n, 38, 68, 74n, 76n, 78n, 81n, 82, 89n, 105-6, 109
 Conservation Department, 97, 98, 99, 100, 101
 Land economic inventory, 22
 Mineral rights, reservation of, 38
- Mississippi, 26, 43n, 74n, 81n, 89n, 101, 105-6, 109
- Mississippi River:
 Ellet report, 57-58
 Memphis convention, 57
 U. S. Mississippi River Commission, 47, 58
- Missouri, 37n, 74n, 78n, 81, 83n, 89n, 90, 105-6, 109
 Conservation Commission, 97n, 98, 99, 101
- Mitchell, J., 87
- Monroe County Planning Commission, 16
- Montana, 7n, 20, 38, 43n, 61n, 74n, 76, 78n, 81n, 82, 90, 91, 101, 105-6, 109
 Conservation Commission, 95

- Moore v. Snow, 8n
 Moose warden, 24
 Morehead v. People, 76n
 Mormons, 58
 Multiple-use, 85, 86
 Murphey, A. O., 50-51
 National Board of Health, 72-73
 National Conservation Commission, 65, 86, 87-89, 90n, 93
 Navigation projects, 57
 Nebbia v. New York, 8n
 Nebraska, 27, 37n, 38n, 61, 76n, 78n, 81n, 89n, 90, 91n, 99, 101, 105-6, 109
 Conservation and Public Welfare Commission, 93, 97
 Nevada, 61n, 78n, 81n, 82, 89n, 91, 101, 105-6, 109
 New England, 18, 31, 36
 Governors, Conference of, 91n
 Commissioners of River Fisheries, 53-54
 Newell, W. F., 86
 New Hampshire, 8, 23, 24, 26n, 28, 32, 58n, 76n, 78n, 81n, 89n, 91, 105-6, 109
 Development Commission, 20, 100, 101
 Fish commissioners, 24, 52-54
 New Jersey, 23n, 24, 26n, 41, 50, 71, 76n, 78n, 81, 82, 83n, 89n, 105-6, 109
 Conservation & Development Commission, 20, 95, 98, 99, 101
 Planning Commission, 103-04
 Water Supply Commission, plans of, 16-62
 Newlands, Francis, 86
 New Mexico, 7n, 38n, 43n, 44, 61, 74n, 78n, 81n, 89n, 101, 105-6, 109
 Conservation Commission, 89n, 91, 93, 94, 95
 New York, 10-16, 23n, 24, 27, 28, 29, 32, 34, 42, 43n, 54, 58n, 67, 68, 71, 74, 76, 78n, 81n, 82, 83n, 89n, 105-6, 109
 Chart of main events in, 10-12
 Conservation agencies, 10, 14, 85, 91n, 93, 95, 97, 99, 100, 101
 Epochs in its development, 15
 Erie Canal, 10, 12
 Forest preserve, 10, 13-14, 29, 32
 Housing & Regional Planning Commission, 10, 14-16, 103
 Land economic survey, 22
 Minerals, sovereign rights to, 2, 36
 Rural Planning & Housing Commission, 16
 Niagara Frontier Planning Board, 16
 Nolen, John, 33-34
 North American Conservation Conference, 86, 89
 North Carolina, 18, 20n, 24, 68, 74, 78n, 81n, 91, 105-6, 109
 Conservation & Development Department, 20, 97, 99, 100, 101
 Geological Survey, 39
 Internal Improvements Board, plans of, 50-51
 North Dakota, 7n, 61, 76n, 78n, 81n, 89n, 101, 105-6, 109
 Ohio, 7n, 12, 29, 32, 37n, 38n, 42n, 43n, 50, 52n, 58n, 68, 74n, 76n, 78, 79, 81, 82, 83, 89n, 105-6, 109
 Conservation Division of Agriculture Department, 99, 101
 Oil, 22, 37, 42-45
 Proration 43-45
 State power, 44-45
 Unit operation, 45
 Oklahoma, 9, 37n, 43n, 61n, 74n, 78n, 81n, 83n, 105-6, 109
 Conservation Commission, 99
 Corporation Commission, 44
 Planning & Resources Board, 101
 Oklahoma v. Kansas Natural Gas Co., 8n
 Old Deluder" Law, 66
 Olmstead, D., 39
 Olmstead, F., 34
 Opinion of the Justices, 82
 Oregon, 20, 61, 68, 74n, 76n, 81n, 89n, 90, 101, 105-6, 109
 Conservation Commission, 91, 93, 94, 95, 96-97
 Osborne, Lithgow, 10n, 14n
 Page, Walter H., 90
 Palmer, T. S., 22n
 Park administration, 13, 21, 31-34
 Conservation agencies, relation to, 32
 Map, 33
 Planning techniques, 33-34
 Penn, Wm., 36
 Pennsylvania, 2, 18, 24, 26, 29, 32, 42, 43, 47, 50, 71, 74n, 78, 81n, 82, 83n, 89n, 98, 105-6, 109
 Greater Council, 20
 Forests & Waters Department, 102
 Pennsylvania v. West Virginia, 8n
 Phosphate, 22
 Pierce, President, 79
 Pinchot, Gifford, 3n, 31, 85, 86, 87, 90
 Pirnie, M. O., 26
 "Plan of Inland Navigation," 47-48
 Planning:
 Agencies for the primary purpose of, 14-16, 86, 103-04
 Difficulties of, 89
 Legal basis of, 5-10
 Meaning of, v, 15-16
 Steps in evolution of, 4
 Strategy of, 4-5
 Police power, 4-6
 Pollution control, 52-54
 Poor care, 79
 Potash deposits, 22
 Powell, John, 21, 58-60
 Pre-emption, "permanent prospective," 19
 Prior appropriation doctrine, 60-61
 Proration, 9, 44
 Public and private conservation, 5
 Public land policies—see land
 Public ownership of resources:
 Decline of, 3
 Legal theories of, 2, 6, 36-37
 Technique of control, 4
 Public works planning, 48-52
 "Purchase" power, 4-5
 Recreation—see parks
 Rectangular survey, 18
 Regalian rights doctrine, rejection of, 3, 8
 Regional planning agencies, 14-16, 86, 103-104
 Reservation:
 Forest, 21, 27
 Game, 26
 Minerals, 18, 21-22, 36, 38

- Reservoir plans, 57-59
 Rhode Island, 2n, 24, 26n, 52n, 58n, 71, 78n,
 81n, 83n, 105-06, 109
 Agriculture and Conservation Department,
 97n, 99, 100, 102
 Conservation Commission, 89n, 91n, 92-94,
 95
 Ribnik v. McBride, 78n
 Riparian rights, 7
 Roosevelt, Franklin Delano, 16, 76n
 Roosevelt, Theodore, 21, 38n, 60, 86-89
 Root, Elihu, 87
 Rush, Dr. Benjamin, 67
 Sargent, Charles, 13
 Sanitation—see health
 Save-the-Redwood League, 32
 Science and technology, 4-5
 Shattuck, Lemuel, 72n
 Shoemaker v. United States, 9
 Smith, Alfred E., 10, 14-15
 Smith, George O., 21n, 22n
 Smith, H. K., 86
 Smith, Samuel, 67
 Smythe, Wm. E., 60
 Soil exhaustion, 19n
 Soule, George, 15
 South Carolina, 18, 24, 26n, 43n, 51, 74n, 78n,
 89n, 102, 105-06, 109
 Geological survey, 39
 Natural Resources Commission, 20, 100
 Public Works Board, plans of, 51-52
 South Dakota, 20n, 38n, 61n, 74n, 76n, 81n,
 98, 102, 105-6, 109
 Conservation Commission, 89n, 95
 Sovereign rights doctrine, 2, 6, 36-37
 "Square deal," 90
 Standards of life, 65-66
 State Government, 3
 Planning, 15
 Reorganization movement, effect on con-
 servation, 97-98
 Relation of framework to planning, 85
 State v. Campbell, 2n
 Stein, Clarence, 15
 Story, Justice, 7
 Strategy of resources planning, 4-5
 Stuart v. School District No. 1 of Village of
 Kalamazoo, 68
 Sullivan, James, 67
 Summaries, 1-2, 17, 35, 46, 64, 84
 Surveyors-general, territorial, 21
 Swamp-land grants, 21
 Swift v. Maryland, 7
 Taft, Wm. H., 90
 Tax exemptions, 6, 27-28, 88
 Tennessee, 23, 26n, 43n, 74n, 81n, 91, 98, 105-6,
 109
 Conservation Department, 97n, 98, 99, 100
 102
 Texas, 7n, 20n, 26n, 42n, 43n, 61, 74n, 76n,
 81n, 102, 105-6, 110
 Minerals, reservation of, 38
 Railroad Commission, 44
 Thompson v. Consolidated Gas Utilities Corp.,
 9n
 Tree planting, 27-28
 Tulare Irrigation v. Lindsay Strathmore Irriga-
 tion District, 8n
 Turner, F. J., 2, 13
 Tyler v. Wilkinson, 7n
 Tysco Oil Co. v. Railroad Commission 45n
 U. S. Biological Survey, 22
 U. S. Board of Engineers for Internal Improve-
 ments, plans of, 49-50
 U. S. Bureau of Plant Industry, 22
 U. S. Children's Bureau, 74, 81
 U. S. Fish Commission (Bureau of Fisheries),
 22, 29, 55-56
 U. S. Forest Service, 29, 93
 U. S. Geological Survey, 21, 22, 93, 94
 U. S. Reclamation Service, 22, 60
 U. S. Weather Bureau, 22
 Unitization of oil wells, 45
 Universities, 41, 68
 Utah, 38n, 43n, 58n, 61n, 74n, 76n, 78n, 81n,
 102, 105-6, 110
 Conservation Commission, 89n, 91, 93, 94,
 95
 "Valley Section," 15
 Vanuxem, L., 39
 Vermont, 2, 12, 28, 38n, 50n, 58n, 68, 78n,
 81n, 105-6, 110
 Conservation Commission, 91n, 93, 94n,
 95, 100, 102
 Conservation & Development Board, 99
 Fish Commission, 52-54
 Virginia, 6n, 14n, 18, 20n, 24, 27, 36, 47, 68,
 71, 74n, 78n, 79, 81n, 82, 89n, 105-6, 110
 Conservation & Development Commission,
 20, 99, 100, 102
 Wallace, Henry, 90
 Warner, Wm., 86
 Washington, 20n, 26n, 38n, 43n, 61, 74, 76n,
 81n, 90, 91, 105-06, 110
 Conservation & Development Department,
 98, 99, 102
 Waste, 3
 Economic, 9, 44
 Legal theory, 9
 Prevention of, 88
 Physical, 43-44
 Water administration, 46-63
 Agencies, large number of, 47
 Comprehensive plans, 47-50
 Canal era, 47-52
 Codes, 60-61
 Commission, 61-63
 Drainage, 58
 Engineer, 58, 60-61
 Fish, 52-56
 Floods, 57-58
 Irrigation, 58-61
 Pollution, 53
 Power, 21, 58
 Supply, 61-62
 Webster, Noah, 67
 Webster, Pelatiah, 36-37
 Welfare administration, 79-83
 Child, 81
 Elizabethan tradition, 79
 Housing, 82-83
 Institutions, 79

- Welfare administration—Continued.
 Map, 80
 Mothers' aid, 81
 Old age assistance, 81-82
 "Public welfare," 4, 79, 81
 State boards, 79-81
 Unemployment relief, 83
 West Coast Hotel Co. v. Parrish, 76n
 West Virginia, 42n, 43n, 74n, 78n, 81n, 105-6, 110
 Conservation Commission, 89n, 95, 98, 99, 102
 Wildlife management, 22-26
- Wisconsin, 20, 25n, 26n, 28, 32, 33, 37, 38, 58n, 68, 71, 76n, 78, 80, 81n, 82, 83, 89n, 105-6, 110
 Conservation Commission, 91n, 93, 94, 95, 97, 99, 100, 102
 Land economic survey, 22
 Regional planning, director of, 103-04
 Zoning, rural, 20
 Withdrawal of public lands, 21-22
 Workmen's compensation, 10, 76
 Wyoming, 26n, 43n, 60-61, 69, 74n, 81n, 89n, 102, 105-6, 110
 Zoning, 6, 20



